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Cooperation the Solution

AMERICAN manufacturers are dependent upon British grown rubber. International cooperation between British growers and American users is therefore a manifest duty. America, as the great consumer of crude rubber, should do its part to save the plantation industry, stabilize prices and share the profits through open covenants openly arrived at. The time is ripe for broad lines in which the great American industry should take the lead.

The Plantation Rubber Muddle

MR. F. CROSBIE-ROLES, one of the best known of the eastern rubber economists and remembered as Ceylon's commissioner to the International Rubber Exhibition of 1911, did a very friendly act in resenting an anti-American article in the *Times of Ceylon*, published not long ago.

The writer of the article virtually accused American users of grossly exaggerating their rubber needs; of collusion among themselves; of treating rubber producers as "fools and slaves who dance under the whip of the manufacturer"; of planning "to do us out of any profit on our monopoly," etc., etc.

Each of these accusations Mr. Crosbie-Roles proves to be without foundation. He brings out the fact that the one overestimate, that of 1920 for tires, brought enormous losses to American manufacturers thus proving at least that it was not done with malicious intent; that buying by Americans is seasonal and therefore does not show collusion; that Americans have repeatedly shown the highest regard for British accomplishment in planting; that American manufacturers have proved the salvation of the planting industry, and that the glut in the market is entirely due to British planting speculation.

That the rebuke was wholly justified is apparent. The fear however that the screed, bitter although it was, would in any way influence American rubber manufacturers against British planting interests need not be entertained.

American rubber interests are possessed of the same type of tolerant indifference that the British themselves show when American Anglophobes print columns of calumny concerning them. Neither represents the attitude of England or America. In fact gross unfairness always serves to bring the right-minded closer together. All the same it warms one's heart to discover so able and honest a champion as Crosbie-Roles.

Hard Rubber Substitutes

SOME thirty years ago there came into being certain materials that to the casual observer appeared to be not only similar to but equal to hard rubber. They contained no caoutchouc and could be produced very cheaply. The writer was frankly fearful for the future of the hard rubber business and brought the samples and the whole story, including his fears, to the attention of the president of the largest and oldest hard rubber company. The verdict was thus:

"If our company found anything as good or better than rubber for our many products, we should doubtless adopt it. So far, nothing has appeared. We feel further that no real substitute for hard rubber is possible. It is as individual and unique as soft rubber. Thirty years hence, no matter what new plastics come into being, the conditions will be the same."

History has amply sustained this wise forecast. Wonderful plastics, as for example the synthetic resins, have come into being but the hard rubber business has gone right on in its constant expansion. Except in a few lines the new plastics have not encroached upon hard rubber. Instead, they have made markets of their own and developed new and important fields of usefulness. And of late have come into being, compounds composed of both synthetic resins and hard rubber that forecast not a rivalry but a union of interests.

It is safe to say, therefore, that in another thirty years the hard rubber business will be still greater, and so, too, will the production of synthetic plastics. This is written while furfural, the latest plastic, is being featured by the daily press, as a new and cheap hard rubber. It is a wonderful product, and its drop in price from $65 a pound in 1917 to $3 a pound in 1921, together with a promise of 10 cents a pound, is amazing. It is bound to find a wide field of usefulness, but it does not promise to displace either hard rubber or bakelite.

Reclaimed Better Than Crude—Sometimes

THAT reclaimed rubber can easily hold its own with low-priced crude rubber is the contention of an English manufacturer, in *The India-Rubber Journal*, who also makes the point that it has brought even a better price than crude rubber. As made in modern plants it is in definite grades, as motor stock, shoe stock, etc., with a uniformity in quality varying scarcely 2½ per cent. It is free of fabric, dirt, oil, grease, rubber substitute, free sulphur, etc., and much of the compounds is removed. It costs less to mix and compound crude and regenerated rubber than to mix all crude with compounding ingredients. Among other advantages claimed are: Dispensing with washing; acceleration of cure; shorter milling time; less variation in specific gravity; tensile strength and stretch; exceptional endurance in hot climates and in variable weather; and especially good resistance to the action of acids and steam. With it less solvent and fewer coats are needed in spreading.

That regenerated rubber is valued on its own merits, and not as a mere cheapener, is attested by its considerable use by many large manufacturers of tires for treads as well as beads. It is claimed that they find control of vulcanization as easy with it as with an all crude mixing. This is high praise considering the reluctance with which the British first accepted reclaimed rubber and then frankly expressed prejudice against it.

Gyps and Super Gyps

THAT the "Gyp" is the idol of cheap car owners is obvious, far too much so. He supplies a great and constantly broadening market. His goods are "factory blemished." That is, so-called "seconds," perhaps rebuilt tires, together with specially built cheap tires. The goods are what a host of buyers want because the first cost is small. Proof that costlier tires are cheaper in the long run does not appeal to this class of buyer in the slightest degree. Therefore, the so-called "legitimate" manufacturer cannot compete.

For the past ten years, the tire producer last named has been bending his energies to the problem of bettering tires. The results have been amazing. Mileage has increased from an average of 3,500 to 8,000 miles. Cost of tire operation cut from about a cent a mile to less than one-seventh of a cent a mile. Prices have also dropped—taking the 30 by 3½ size for an extreme example—from $33.90 to $10.95. All of this has been accomplished by new and automatic machinery, new processes, simpler compounds, and team work efficiency.

In spite of this, the "Gyp" has not been eliminated. Indeed, he has been increased. Hence, comes the "Super Gyp," the legitimate manufacturer who is out to get the cheap tire market. He means to employ all of the experience that came from building better tires in producing cheaper tires. Nor does this entail shoddy productions, but rather giving better value for the money received than has ever before been possible. High priced tires will still be made in quantity and find plenty of purchasers, but with them will come low priced tires that will do excellent work and give general satisfaction. Nor will the two sets of "Fourteen Points" framed by the tire dealers in convention avail to stay this procedure. It is inevitable. It has come and, wisely accepted, it will be for the good of the trade. The "Super Gyp" will exterminate the "Gyp."

New England Leads in Rubber Shoes

IN the past twenty years many New England industries have moved to distant localities to take advantage of cheaper fuel, nearness to markets and for other equally sound reasons. An exception to this rule is found in the rubber shoe business. Established in the forties it has continued a notable and constantly growing business still centered in the New England States. Nor have the few rubber shoe factories established in the South and West and in Europe appreciably affected them, and this in spite of the fact that ample capital and long experience in other lines of rubber manufacture were brought into play. Indeed one millionaire tire manufacturer in the West, who added a rubber shoe unit, and ran it for some years, frankly confessed that he could not compete and moved his shoe business to New England.

Just to show in figures this sectional ascendency: of the twenty-five factories making rubber footwear, eighteen are located in the New England States. The yearly production is approximately $117,000,000, of which about 75 per cent goes to New England's credit.

THE FEAR THAT WIRELESS INSTALLATIONS WOULD render cables unnecessary, due perhaps to Marconi's prediction, has finally been proved baseless. According to the president of the Western Union Telegraph Co., only 12 to 14 per cent of the transocean business is done by radio. Moreover it is practically all new business. Hence the gutta covered cable is still a necessity and will doubtless so remain.

By analogy it is probable that rubber covered wire will continue to be used in telegraph and telephone work no matter to what extent radio is used for communication on land.

Production Control in a Tire Manufacturing Plant

By W. B. Mendenhall, Industrial Engineer[1]

The basic plan that underlies this very practical treatise is not confined to tire manufacture. It can be used in any factory, big or little, making any kind of goods. The engineer author is an expert in this line. His conclusions are the result of years of practical application of his theories. They have spelled success in other factories and will do so in many others.

THERE are two requisites for the successful establishment of economical production control in any plant: first, a definite decision on the part of the management to standardize its product and to produce fixed quantities of a certain type or types in a given period, or, as has been more definitely stated, to "manufacture and sell" not "sell and manufacture." Second, to secure the confidence of the men before attempting installation and convince them that planning and scheduling of work is going to benefit them—physically and pecuniarily. If you have not these two requisites, and candidly I believe the first is the harder to secure, then don't attempt to install with any idea of immediate success and profit.

Management, today, realizes the necessity of utilizing every possible means to secure economical production and is therefore more prone to listen to reason along these lines and commit itself to a definite policy for a given period because it is their very life to produce cheaply. Labor, on the other hand, wants permanent employment at a livable wage with opportunity to develop the individual power of each man with its resultant emolument to that individual.

Therefore, the industrial engineer has every inducement to install systems of production control, *not* in an arbitrary manner, but only after careful study of equipment, material and men, and after presenting to both management and men full detail figures of what can be done and what mathematically can be produced by scientific planning.

Many articles have been written showing the necessity, before planning, of scheduling all machinery and equipment with the minimum and maximum results that can be obtained therefrom, the quality and quantity of material that can be produced in a given time from the machinery, and accurate time and motion studies of the performance of operators on each class of work—but—*too much emphasis cannot be laid on these principles*, if production control is to be a success.

We have read many articles pointing to the "infancy" of the automobile industry, but certainly it has advanced far enough to show manufacturers the necessity of standardizing parts. Advance, to some degree, has been made toward standardizing and minimizing the quantity of rim sizes, but much more should be accomplished quickly.

The standardizing of sizes of tires depends upon the standards of rims, but standardization in kinds of tires manufactured by any one company is truly yet in its "infancy." The public does not require all of these makes, and sane manufacturing principles do not warrant the extravagance.

This article, however, is not a treatise on what can be accomplished but what has been done in standardizing and controlling the product in one plant. The system outlined is not elaborate nor costly to maintain after once established, as two people can plan and schedule the actual performance of work in a tire factory producing 1,500 tires, or less per day. The initial cost and time in securing reliable information and preparing accurate detail charts and tables, without which any system is valueless, is the greatest expense.

[1]The Spreckels "Savage" Tire Co., San Diego, California.

Production Control

Production control from its name would indicate only manufacturing process and for that reason large organizations have two departments: Production Control; and Merchandise or Stock Control.

Inasmuch as one is vitally dependent upon the other it is logical that in a small plant the two should go hand in hand and all operations be covered in the one department—that of production control.

By centralizing these, you will also avoid the optimistic or pessimistic viewpoint of both the factory and sales heads, inasmuch as the production control head makes his determinations only from statistics showing actual sales, and stocks on hand.

In establishing production control, every department *must* be thoroughly in accord as to what is to be produced and abide by the rules and conditions governing "Fixed and Stabilized Schedules."

The first step is to standardize product. That is, to determine the exact class, kind and sizes of articles to be produced during a given period. No deviation from this product will be made, except and unless for experimental purposes.

Standardization

To determine the minimum number of articles or lines to carry we must first chart our sales for a given period by months and by size and kind, or size, type and tread. This was done for a period of two years. A similar chart was then prepared for sales of all tire companies, which figures were compiled and published by The Rubber Association of America. A chart was made showing the number of cars registered in the United States by states and a table made up showing the standard rims in use.

The general manager, the sales manager, the production superintendent and the production control engineer, in conference, determined from these charts what classes could be eliminated and what classes should be the subject of sales concentration, and naturally the standardized product. Knowing the value of producing as few lines as possible, our line was cut from 181 to 28 standards.

Rechart the sales made, confining them to the standards established, increasing or decreasing them to conform with the kinds of cars registered in the territory handled, and establish the "quota" or "standard" sales which are expected of the Sales Department in the ensuing year.

Standard Production

From the standard sales shown on the graph, determine the quantity of each size and kind that should be carried in warehouse. (The United States statistics show approximately the total of three months sales always in warehouse.) Set up the proposed standard sales on graphs by months, showing fluctuations by months—set up the average line of sales and then establish from the peaks and curves the monthly production necessary to permit a standard of production and yet maintain the minimum and maximum quantity in warehouse.

For instance, starting with none in stock of a given size and

wishing to maintain an average of two months warehouse instead of three, our sales showed as follows. We would not maintain, for economy's sake, the full warehouse quota during the first year but would have the quota established at the end of the year, as

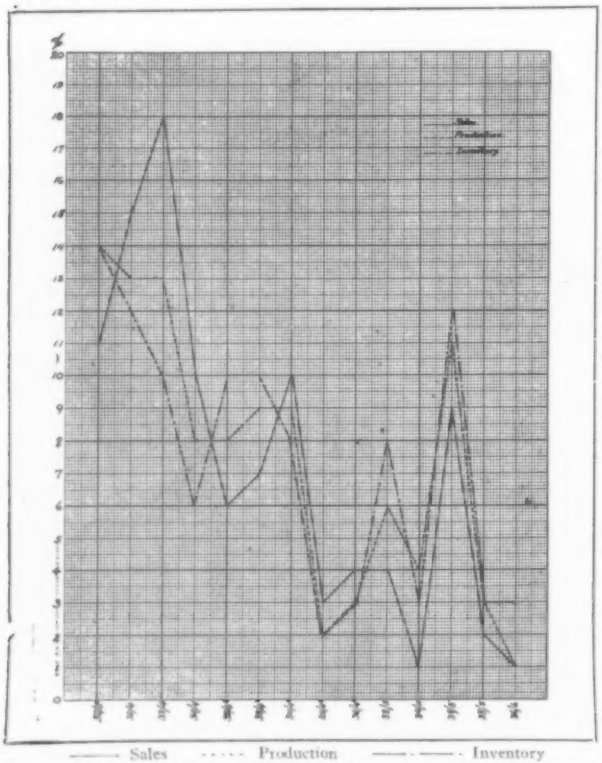
	Sales		Inventory at End of Month
January	100		270
February	150		490
March	250		610
April	400		580
May	400		550
June	500		420
July	500	Production	290
August	500	370	160
September	400	per month	130
October	300		200
November	200		370
December	150		590
	3,850	4,440	
Average	320		

If sales continued the same the following year our production would be reduced to 320 as we have approximately two months supply on hand to commence with. This same principle can be worked for any given period or, if certain kinds are in stock, inventory figures must be taken into consideration at the start. See Fig. 1.

After determining the standard production desired, other charts must be made to show whether such standards can be lived up to with the machinery and equipment on hand.

Standard Specifications

From experiments and tests conducted by the Research Department and Laboratory you have determined just what designs are desired, the materials that will enter into the manufacture and the



Sales ----- Production —·—·— Inventory

Fig. 1. Chart Showing Relation Between Production, Sales, and Stored Tires

methods by which the articles will be manufactured. Therefore a standard specification is made up for each size, type and tread of casing and each size and kind of tube showing the quantity and kind of every part that enters into the completed article.

Process Sheets

Each part shown in the standard specifications is made up of materials in quantities, times and methods, prescribed by the Laboratory in subsidiary specifications or process sheets.

Tables

A series of tables are made from standard specification and process sheets to show quantities and weights of every part entering into the completed whole. See Fig. 2.

Table 1.—This shows first, the net measurement of ply fabric and net weights of rubber both friction and skim that enter into

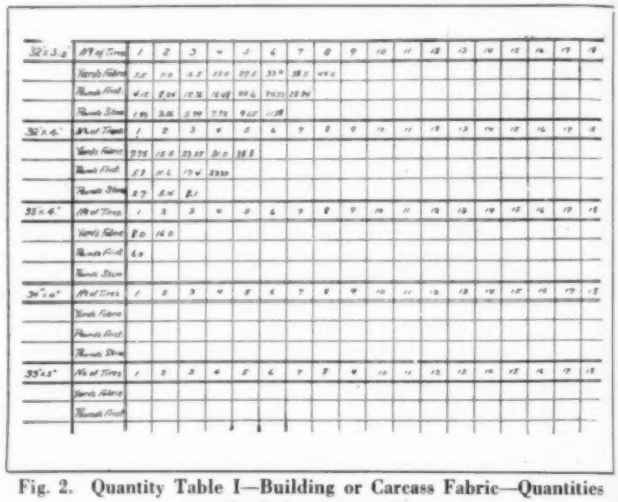


Fig. 2. Quantity Table I—Building or Carcass Fabric—Quantities Used Are Assumed

the manufacture of each ply of each size, type and tread of casing to which is added an allowance for waste in calendering, cutting and building. These measurements and/or weights are figured from 1 to 20 tires, inclusive, or more if desired to allow for economic calculations or any quantity that may be scheduled in each size, type and tread.

Similar tables are made up for each of the following, each table showing every size, type and tread and in quantities as above. Table 2, Breaker Fabric; Table 3, Anchors and Chafers; Table 4, Tread; Table 5, Bead Stock; Table 6, Sidewall; Table 7, Cushion; Table 8, Breaker Cover; Table 9, Tubes; Table 10, Airbags.

Raw Materials

All of the above articles being made from different grades of rubbers and various chemicals, properly mixed or machined in accordance with the process sheets, or orders, and coded as to kinds of "batches" we must make up the following tables:

Table 20, Table of Breaking Down Rubber, showing weights of each kind of rubber used in each batch; Table 21, Table of Ingredients, showing weight of each particular chemical used in compounding of each batch; Table 22, Table of Compounds, showing the kinds and weights of all materials entering into each batch; Table 23, Table of Weights of Batches, showing the weight of all materials of each batch calculated for 1 to 20 or more batches.

For sheeted gums it is necessary to make up Table 24, Table of Specific Gravities, showing the specific gravity of various rubbers per square yard (1/16-inch thick); Table 25, Table of Rubber Per Tube, showing weight required for each size and kind of tube with allowance for scrap at the calender and in molding and finishing.

Beads

Table 26, Table for Beads, shows the quantity and weight of fabric and rubber together with quantity, kind and weight of

wire entering into 1 to 20 or more beads for each size, kind and tread.

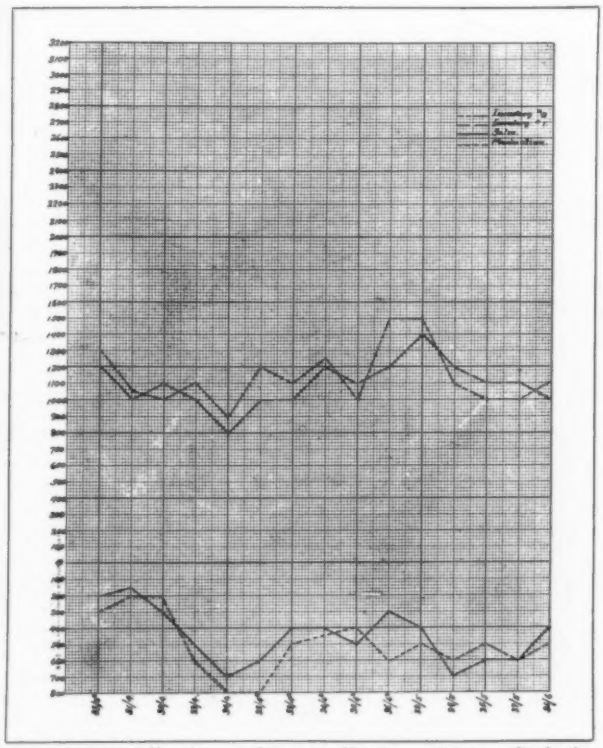
Having secured and tabulated all detail information as to the kinds, weights and measurements of all materials entering into the composition of each part and each batch it is necessary to tabulate the time required on each machine for each batch and we therefore set up Table 30, Table of Breaking Down Times; Table 31, Table of Washing Times; Table 32, Table of Drying Times; Table 33, Table of Mixing Times; Table 34, Table of Calender Times; Table 35, Table of Tubing Times.

These times are carried out for every material by code both as to weights and quantities. With the quantities and times before us we must apportion that time to the machinery and equipment and list by names and sizes in the following: Table 40, Table of Machinery—all departments—by letters; Table 41, Table of Equipments—all departments—all kinds—by letters.

Time and Motion Studies

During the preparation of the schedules required for producing the material, we have been working on the very vital point of determining the actual time of building and finishing each size, type and tread of casing and the molding and finishing of each size and kind of tube from the receipt of the various component parts until its final vulcanization.

Tables have been prepared showing by each size, type and tread. Table 50, Table of Building Time; Table 51, Table of Finishing Time; Table 52, Table of Building and Finishing Time; Table 53, Table of Bead Making Time; Table 54, Table of Tread



- · - · — Inventory No. 2 — — Inventory No. 1 —— Sales · · · Production

Fig. 3. Chart for Schedule Determination

Making Time; Table 55, Table of Vulcanizing Time; Also Tables for Tube Processes.

And now with all our tables set in front of us we are prepared to determine whether we can produce the quantities of each size, type and tread of casing and size and kind of tube desired by us and set up on our "Chart for Schedule Determination." See Fig. 3.

From the first tables set up we secure the quantities and weights required for one day's run.

From the time tables, we determine the operating time required.

From the machinery and equipment tables, we find whether required production can be made complete in given time for one day's schedule.

It may not be possible to produce the exact quantity of each size, type and tread each day owing to lack of equipment or machine hours and it may be necessary to change the building schedule each day or series of days to produce required standards, but by establishing the requirements and possibilities of performance, it enables you to determine whether additional equipment is justified or not. In any event you are now prepared to establish a daily production schedule.

Daily Production Schedule

Reference is made to the unit tables and computations made as to the quantity of each kind of material or parts required by the schedule each day. Determination is made as to quantities entering into various materials and processes, length of time necessary to manufacture, and producing equipment. The length of time necessary to produce material required by schedule is figured out and economy runs fixed. This work requires great care as on the one hand time must be saved by elimination of many set ups requiring idle machine hours, and on the other hand too long a run cannot be maintained owing to possible deterioration of material by storage.

It is best to figure on a production to fill 72 hours requirements between each department, to allow for break-downs and wastage, speeding up or retarding schedules in other departments. By this, you will see that while a fixed daily schedule can be set up for a month or longer it may be necessary to change or rearrange the component parts of the schedule many times in the period, sometimes every day—but such changes are minimized by the 72 hour storage between departments—and would materially equalize during certain periods.

With these computations made out production orders are issued to each department showing what work shall be performed each day. These orders are returned at the end of the day showing actual accomplishments. If underproduction shows, the cause for it is given and as all of the quantities have been determined by time studies, investigation is made by the one in charge of that class of work to determine the fault and take steps to correct it. If break-down, shortage of labor, imperfect material, or other causes liable to cause a reduction in production scheduled, occur during the day, the operator or foreman must notify the assistant superintendent and Production Control Department at once either to correct or rearrange production schedules and reports to keep schedule stabilized.

Control Boards

The inventories having been set up on control boards, indicators are set as to the daily quantity to be used; minimum quantity to be on hand; maximum quantity to be on hand.

In raw materials the minimum and maximum quantities are determined in conjunction with the purchasing agent, allowing ample time for purchase and delivery, and in connection with schedules. In goods in process the minimum and maximum quantities are determined by the quantity which must be on hand in various departments during process of manufacture to allow for economy runs, storage and break-downs or labor shortage. In finished products, the minimum and maximum quantities are determined from the graphs previously mentioned.

On return of the production reports by the departments, the index on the control board is moved backward covering the

quantity used that day, and moved forward covering the quantity manufactured. In raw materials it is moved forward on report from the storeroom of quantities received. In finished products it is moved forward for manufactured goods placed in stock, for goods returned from customers and moved backward for sales made.

As a check on the control boards, a card record is kept of all goods in process, giving the figures in and out and maintaining a

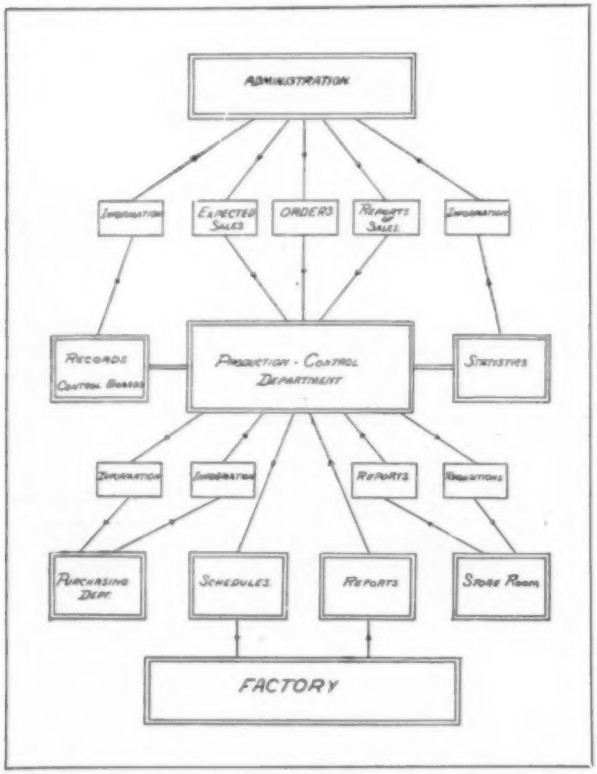


Fig. 4. Organization Chart of Factory Production Control

perpetual inventory, checked each month against a physical inventory.

Each day copies of sales orders are delivered to the Production Control Department, which, by referring to the control board can see whether sufficient quantities are in stock to fill them.

If the order is an exceptional one and reduces stock to below minimum, inquiry must be made of the Sales Department as to whether the order should change the predetermined schedule and increase the minimum storage amount, in which case it will be necessary to revise the permanent fixed schedule. If only a minor or seasonal fluctuation it may be that the fixed schedule will equalize the storage gradually.

If an order is received for which there is not sufficient quantity on hand, the indicator will show the quantity being made and how soon order can be filled, which information is forwarded to the Order and Shipping Department. If the fixed schedule quantity does not permit of early filling of order, reference is made to quantities on hand of other kinds and a revision of schedule made to reduce those close to maximum storage and increase the kind desired. This necessitates revision of indicators, and production schedule and reports in those departments affected. It may mean a permanent revision or only temporary.

When such changes are made on specific orders a different colored indicator must be set up temporarily until the storage point has been reached.

At present the finished product control board covers all stock at the warehouse and branches, the various stock record books showing quantities in the warehouse and each branch and telephone communication can designate location in a few minutes, therefore it is not wise at this juncture to maintain separate boards, rather, it would tend to confusion. If orders show stock on hand, and, having been passed on, the shipping clerk finds the stock is not in the warehouse, he locates the branch having it and determines whether to ship from the branch or to have new stock in which case the order is referred back to the Production Control Department.

From the production schedule and reports the department maintains a record of lost time, waste (allowable and careless) and the reasons therefor, reporting them to the various executives in charge, and also maintains graph charts for the information of department heads and employes as to production and waste.

From the production schedule and reports issued, the department foreman will apportion the work to the men under him, setting up a schedule for each man. Where machines are affected the Production Control Department will indicate the machine from its equipment inventory and records of performance, speed, etc. The Production Control Department frequently sets up the original "man" schedule as a basis for the foreman's guidance, but the foreman is held responsible for living up to the schedule and must therefore be allowed a certain latitude to "shift" the schedules owing to absentees or temporary damage to equipment.

It will be noted, from the foregoing, and visualized by the organization chart shown in Fig. 4, that the Production Control Department is the "clearing house," so to speak, for every department interested in production from purchase to sales and therefore cannot function properly unless each department furnishes its share of information desired and draws from the department its share of results performed. In other words, strict *coordination* means success or failure of production control.

BAKELITE, CONDENSITE AND REDMANOL MERGE

The Bakelite Corporation, 8 West 40th street, New York, has taken over the General Bakelite Co., the Condensite Co. of America and the Redmanol Chemical Products Co. L. H. Baekeland is the president of the new Bakelite Corporation, with Philip Schleussner, A. Karpen and Kirk Brown vice-presidents, the last being also general manager. Dr. Baekeland remains also president of the General Bakelite Co., Kirk Brown president of the Condensite Co. of America, and Dr. L. V. Redman president of the Redmanol Chemical Products Co.

In many respects the products of the three companies are not identical; each supplements the others in important particulars. Thus, formaldehyde and "hexa" are made only by Redmanol; galalith is made only by Redmanol; chlorine substitution products are made only by Condensite, and transparent material is made by Bakelite and Redmanol but not by Condensite. Their phenolic condensation products also differ somewhat in the method of manufacture.

The three companies entering the merger will continue separately to manufacture and market their products which are well known under the names of bakelite, condensite and redmanol; these have found wide applications in the radio field, the automotive and electrical industries and for a large number of mechanical uses. In their transparent condition the materials are used largely in the pipe trade and for various ornamental purposes in place of natural amber.

All the well known laminated products such as bakelite-micarta made by Westinghouse, bakelite-dilecto made by Continental Fibre Co., condensite-coloron made by Diamond State Fibre Co. and redmanol-formica made by the Formica Insulation Co., which are so largely used in the radio field and in making silent gears, are made of these materials.

Hard Molded Plastic

Hard Rubber and Hard Rubber Substitutes

THE term "hard molded plastic" designates any sort of plastic material which hardens and assumes permanent shape in a mold under heavy pressure with or without heat, depending on the nature of the binding material of the composition.

The original and typical hard molding plastic is vulcanite or hard rubber. Goodyear's discovery of vulcanization and the production of hard rubber was aptly referred to by Daniel Webster as equivalent to the invention of a "new semi-metal."

Preeminence of Hard Rubber

Hard rubber still holds preeminence as the chief among the hard molded plastic materials notwithstanding the many substitutes that have appeared. Some of these even surpass hard rubber in special points of excellence and consequently are able to displace it for particular uses.

Hard rubber is unexcelled for faithfulness in molding to any desired shape, for perfection of finish, and facility with which it can be machined by boring, turning, threading, polishing, etc., in all respects the same as a metal. Its tensile properties naturally do not approach those of metals. Its dielectric quality is excellent and even in comparison with hard rubber substitutes of the phenolic resin type it is preferred in the manufacture of radio, telephone parts and for other electrical purposes.

Substitutes Vary With Requirements

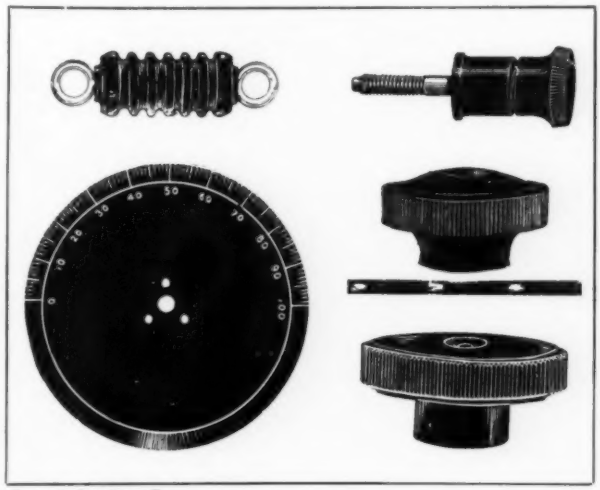
It is interesting to note that preference for hard rubber persists notwithstanding the excellent qualities of the various substitute products. By reason of the characteristic properties of hard rubber and the various substitutes the industrial development of each product naturally follows lines of special adaptation.

Hard rubber displaces other materials for purposes for which it is better adapted and in turn is displaced by substitutes for a similar reason. Thus the fields of hard plastic materials overlap and constantly vary with the requirements of industrial progress. As a result of this differentiation each material gains in the scope of its applications and its production continues to grow as an industry.

Telephone and Radio Receivers Are Invariably Made of Hard Rubber

Some Hard Rubber Characteristics

Pure hard rubber consists of rubber and sulphur only, fully vulcanized. The old mixture consisted of two pounds of rubber to one pound of sulphur. This formula is still in use although in the course of the development of the industry many compounding ingredients have been added for specific uses.



General Insulate Co.

Typical Parts of Both Hard Rubber and Molded Insulation

Many small articles such as cases, caps and receiver shells for telephones as well as articles for other purposes are made by pressing and revulcanizing hard rubber dust obtained by grinding up hard rubber scrap. The production of articles from hard rubber dust[1] is a very economical method without deterioration of the quality.

The nature of the material and the process of vulcanization make it possible to produce hollow articles of hard rubber by inflation in the mold. It is impossible to do this with any of the hard rubber substitutes because of inherent differences in both materials and processes. This is an instance when substitution for hard rubber is not possible.

The Molded Shellac Industry

The manufacture of plastic molded composition substitutes for hard rubber originated fifty years or more ago as an American idea. The originator is not known but credit for its development is due to Peter L. Sylvester who in 1870 was superintendent of the Woodruff Brothers, makers of pearl and bone buttons, and suggested the value of shellac compositions for making inexpensive buttons in imitation of hard rubber.

Mr. Sylvester with Charles Wicks, who at the time was in charge of Woodruff Brothers' machine shop, developed shellac stocks from which buttons were made successfully. Sylvester and Wicks some time thereafter went into the shellac molding

[1] See THE INDIA RUBBER WORLD, March 1, 1922, pages 409-411.

business for themselves but failed and they returned to Woodruff Brothers in their former capacities.

The practice of shellac molding could not long remain confined to one establishment and other Woodruff employes started the Ithaca Button Co., Ithaca, New York. This company being unsuccessful was sold and the business and equipment were removed to Sayre, Pennsylvania. In time the concern was sold and transferred to Scranton, Pennsylvania, where it was finally successful and continued as the Scranton Button Co. Some years after the established of this company Peter L. Sylvester left Woodruff Brothers and became the superintendent of the Scranton Button Co.

Woodruff Brothers were the pioneers in shellac molding and at the present time under the name of the Auburn Button Works, Auburn, New York, continue to be the leading producers of shellac molded goods.

Early in the eighties the molding of shellac composition substitutes for hard rubber was begun in Brooklyn, N. Y., by Joseph Rockhill and Louis Steinberger who organized The Fibrone Manufacturing Co. About 1890 The Terraloid Co., Newark, New Jersey, was established. These two companies later united as The Fibro-Terraloid Co. and ultimately became part of the Electrose Co., of Brooklyn, N. Y.

In 1894 Joseph Rockhill established the General Insulate Co. of Brooklyn, for the manufacture of shellac hard rubber substitutes. His connection with this industry extends over a period of forty years.

Phenolic Resins

There are three well known phenolic resins used in plastic molding. They are Bakelite, Condensite and Redmanol.

Bakelite

In 1907 Dr. Leo H. Baekeland invented bakelite, the trade name of anhydrous phenolic resins, or condensation products from phenol and formaldehyde. This material possesses most remarkable properties and its introduction in 1909 marks the greatest advance in the art of plastic molding.

Since their discovery the prompt and vigorous industrial development of phenolic resin molded products has proved of highest value in the automotive and electrical industries.

Condensite

Condensite is the invention of J. W. Aylsworth, for more than a quarter of a century associated with Thomas A. Edison as chief consulting chemist. It was developed in the course of a search for a better material to be used in the manufacture of phonograph disk records, which are probably the most difficult plastic articles to manufacture without imperfection.

Condensite, during the reaction between the ingredients of which it is composed, is heated to such degree as to dissociate all the water. This absence of water, even in minute quantities, gives to the final product a capacity of taking extremely minute impressions in molding and imparts to it as well unusual electrical and other qualities.

Redmanol

Redmanol was developed in 1910 by L. V. Redman, A. J. Weith and F. P. Broek, three assistant professors in the industrial chemical department of the Kansas State University, and was named for one of the inventors. Instead of using formaldehyde and phenol in the process of making redmanol, formin or hexamethylene tetramine derived from formaldehyde is used.

Furfural-Phenol Products

Formaldehyde and Furfural—Furfural Production Methods—Phenol-Furfural Resin — By-Products — Furfural Varnish

More than six years of research work by chemists in the laboratories of the United States Department of Agriculture has resulted in the development of a process that will accomplish the following far-reaching results:

1—Make possible the production of low-priced substitutes for a wide variety of hard rubber and synthetic resin products.

2—Provide a good market for waste farm by-products.

3—Conserve the native supply of methanol (wood alcohol) and the forest products, particularly hardwoods, used in the manufacture of methanol.

4—Provide a possible motor fuel supply.

The achievement consists in the perfection of methods for producing a chemical compound known as furfural at a low price and by a simple process from corn cobs. Dr. Frederick B. La Forge and Gerald H. Mains of the Bureau of Chemistry are credited with having done this work. They have successfully brought the process for the production of furfural to a commercial scale, and at the same time have aided in the development of a commercial market for furfural by supplying quantities of the material to manufacturers for cooperative research on its utilization.

Furfural produced from corn cobs is the material which the newspapers have so widely featured as corn cob hard rubber.

Formaldehyde and Furfural

The synthetic resins industry, since chemists discovered the secret of making them about 15 years ago, has had a remarkable growth. The raw materials used in this industry are chiefly formaldehyde and phenol (carbolic acid). These two compounds, chemically combined, condense into a solid which is highly valuable as the basis for making various articles. Thorough tests have proved furfural to be an excellent substitute for formaldehyde in this work.

Furfural is an aromatic liquid aldehyde, boiling at about 162 degrees C., nearly colorless when first prepared but darkening on exposure to air and light. That it reacts with various compounds, especially phenols and amines, to form products of a tarry or resinous character, has been known for some time.

The possibilities of conservation may be seen when it is explained that the source of formaldehyde is methanol (wood alcohol) and that methanol is produced chiefly from the destructive distillation of hard woods, such as birch, beech, oak, maple and elm. The soft woods, while they are more plentiful in America, produce such low yields of methanol that they are of small value as a source of supply.

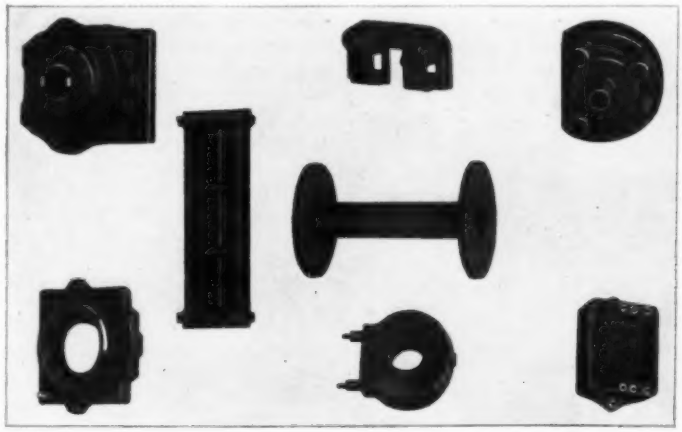
The present price of formaldehyde is eight to ten cents per pound for a 40 per cent solution. Under methods of producing furfural now in general use, the product sells for about 60 cents per pound. The present price of methanol is about 60 cents per gallon.

Furfural Production Methods

Furfural, under the La Forge process, can be produced commercially for about six cents per pound, and with the development of the by-products, also obtained from corn cobs, Dr. La Forge is hopeful that it may be produced even more cheaply.

The method of production is quite simple, as opposed to the former method of obtaining furfural which is a complicated and costly process. Following their laboratory experiments, Dr. La Forge and Mr. Mains erected a large scale experimental plant in the large industrial laboratory of the Bureau of Chemistry. Later, an experimental plant for its manufacture has been set up at the Color Laboratory, Arlington Farm, Virginia. The capacity of this plant is 40 to 50 pounds of furfural per day. On this scale a 6 per cent yield on corn cobs, or 120 pounds of furfural per ton of cobs is obtained. Several hundred pounds of furfural have been made incident to the experiments carried on during the past year. A large part of this material has been shipped to various manufacturers for experimental purposes.

The extracting apparatus consists of a large steel cylinder, conical in shape at the bottom, with a removable lid which can be clamped down tightly, and a valve at the bottom for the discharge of the exhausted material. The corn cobs, with some water, are placed in this cylinder or pressure cooker and steam at about 135 pounds pressure is turned in. After cooking for about two hours the furfural is blown off with steam, passed through a condenser and collected as a solution of furfural in water. This solution is then distilled in a special apparatus for the separation of the furfural from the water.



Hemming

Magneto and Similar Parts Made of Synthetic Resin

The old method of production consists in heating vegetable materials with strong mineral acids. Then the acid is neutralized and furfural separated.

Plans are now under way for the erection of the first commercial plant to utilize the new process. It probably will be located somewhere in the corn belt where raw materials are close at hand.

Furfural from Oat Hulls

The Miner Laboratories, of Chicago, acting in a consulting capacity for the Quaker Oats Co., about a year ago found furfural to be formed in large quantities during the treatment of oat hulls with acid in an endeavor to make them more suitable as a cattle food. They were ready to produce furfural on a small scale early this year, and one manufacturer who has developed furfural resin to the commercial stage, has been able to use the greater portion of the furfural made by the Miner Laboratories. The present capacity of the Miner plant, located at the Cedar Rapids, Iowa, mills of the Quaker Oats Co., is said to be about 150 pounds of furfural per day. They quote a price of 50 cents per pound in 100 pound lots, and have recently announced a price of 35 cents per pound in 1,000 pound lots.

Phenol-Furfural Resin

The importance of this work is apparent when it is understood that such widely used articles as printing plates—light, durable substitutes for electrotypes—phonograph records, varnishes, pipe stems, cigarette holders, electrical instrument parts formerly made from hard rubber, buttons, binders for brushes, glue and a hundred other kindred articles are now being manufactured from synthetic resin compounds, and the use of such resins is rapidly increasing.

The above type of resin is made by the condensation of furfural with phenol. It can be made in a fusible form which is converted into infusible molded articles under the application of pressure and heat. It may be pointed out that the phenol-furfural infusible resin is much harder than the phenol-formaldehyde resin, and that with the low price of furfural assured, these resins can enter a field which the formaldehyde resin has not touched.

The credit for developing the phenol-furfural resins to the commercial stage should go to Emil E. Novotny, a well-known research engineer. He and his research staff of five chemists and engineers have spent the major part of their time during the past two years in this development.

Furfural By-Products

Among the available by-products in the production of furfural are acetic acid and a gummy material which has a field of usefulness in the manufacture of coal briquettes. Tests show the undisputed superiority of the briquettes made with this gum over those made with other binders. The new briquettes are characterized by a total absence of smoke and superior water-resisting qualities.

Furfural has been tried as a fuel in an automobile engine and worked successfully, Dr. La Forge reports. It will explode under the conditions of the automobile engine, but, because of its high boiling point, cannot be used with the type of carburetor suited to gasoline.

Furfural Varnish

In the Government laboratory some work has been done on synthetic resins of the fusible type suitable for varnishes and varnish stains. Since the field of paints and varnishes does not come under the Bureau of Chemistry, the facilities for developing these resins to a commercial stage are lacking. However, with the low price of furfural now assured they assume a promising aspect.

SOME CONSIDERATIONS IN SELECTING BELTING

Conditions must be considered in selecting belting, if the best service is to be obtained. For general machine shop work leather belts continue to predominate, as they are particularly fitted for certain unusual conditions, such as reversing, or where there is jerking or constant side pull. Cotton belting has however largely replaced leather in outdoor power transmission, or for industries where there is much dirt and grit as in cement mills, brick plants, crushing plants, etc. Such belts are especially useful in hot and dry places.

Rubber composition belting, on the other hand, is being widely used and found to be most satisfactory in paper mills, dye houses, laundries, etc., or wherever there is much dampness. Like cotton belting it should never be used in connection with finger shifters as the edges are liable to become frayed, and the belting wear out prematurely.

Notwithstanding care in putting a new belt on the pulley, and joining the ends with exactness, a belt will often run crooked after a short time. When this happens the belt should be taken off and the imperfection carefully removed. Watching a new belt closely pays in the long run.—W. F. Schaphorst, 45 Academy street, Newark, N. J.

Clean Plantation Rubber

A Plea for Better Packing—Novel Features of the Bale Case

By E. L. Bower

THE article in THE INDIA RUBBER WORLD, June 1, 1922, regarding splinters of wood in plantation rubber has called attention to a serious defect in the packing system which has too long been left in abeyance. With rubber at its present price level, too much stress cannot be laid on the importance of having the raw material clean and ready for the mixers without its having to undergo further preparation for the extraction of foreign material. Only in a very few instances is any attempt made to attain this end and the manner of packing and shipping leaves very much to be desired. With Momi cases dirt works in between the boards and friction of the rubber content inside of the cases causes wood splinters. This may not happen to so great an extent with the Venesta case.

Better Packing Needed

There is a need common to all packages at present used for packing rubber, namely, that of turning out the contents for inspection, sampling and tareing. Even when a case arrives in good condition it is often necessary to partly break it open to release the rubber which is tumbled out on a dirty warehouse floor. With the present method of handling rubber frequently arrives in the manufacturer's hands in anything like a clean condition. It might be almost a worthless commodity, such is the treatment meted out to it at the dock warehouses. The warehouseman himself is not always and entirely to blame as the plantation companies are apparently quite content to leave matters as they are until manufacturers in general insist upon getting a better and cleaner article.

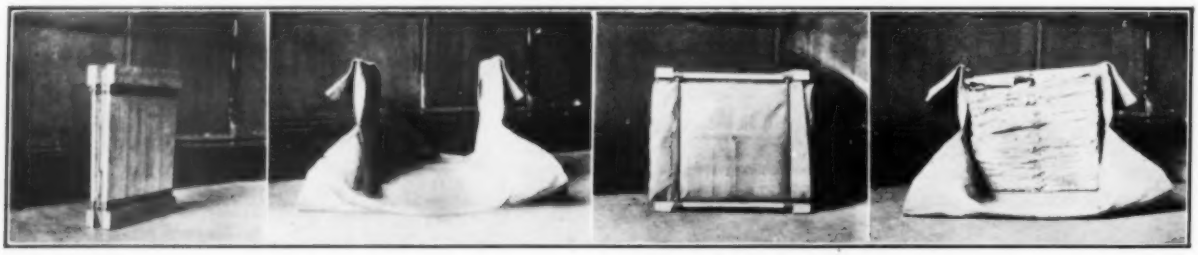
There should be a standard for clean rubber, which does not mean clean merely in the appearance of the sample submitted to the Standard Qualities Committee. How can such a committee determine what the rubber will be after it has passed through the warehouseman's hands and accumulated dirt off the floors, chips from the broken and coopered cases, and still further impurities while en route to the consumer? Bale packing of suitable material, while it may keep the rubber clean, has the disadvantage that owing to the weight of other cargo the rubber gets pressed into a solid block.

The Bale Case

Recently a package known as the bale case has been introduced for the purpose of eliminating dirt and chips and avoiding turning out the contents on the floor for inspecting, sampling and tareing. Briefly, the rubber is wrapped in canvas and the bale thus constituted is contained between two boards held in position by iron bolts. On these bolts nuts are so disposed that the boards remain fixed in position and the contents of the bale do not become compressed in transit. On arrival the removal of four nuts releases the top board, the canvas is unlaced and turned down at the sides and ends exposing the whole contents to view for inspection and sampling. There is no need to remove the rubber as the packages are made to standard size and uniform tare. After sampling, if the contents do not fit back exactly into the same space the threaded bolts allow a certain amount of adjustment in the fitting of the board after the rubber has been again wrapped up and laced. If required the two flaps of the bale can then be sealed. This opening up can take place as often as desired and the operation takes but a few minutes; there is no coopering or incidental charges thereto and the rubber is kept clean. Moreover, the canvas covering gives ventilation to the contents. Rubber packed damp has a chance of drying out, rain or seawater will quickly evaporate and the tendency to mold is lessened if not entirely eliminated.

The cost of the bale case when made in the East would not be more than the ordinary wooden case, probably less, as it would be possible to return the empties if really worth while—they can be folded up into one-fifth the size of a full case. The cubic measurement of the package is 5 feet and it holds 200 pounds of rubber or even more if neatly packed. It seems ideal for the purpose. Why, then, is the bale case not adopted? In the first place there is the British apathy in adopting anything new and there are other reasons. There is an established trade in standard cases between the plantation and eastern agents. Then the warehouseman makes a considerable income on handling these cases and the more they are handled the more cooperage is required. It is said that when some of these bale cases came to London recently the warehousemen admitted the facility with which they were handled and they were rather hard put to it to find an excuse for condemning them.

If manufacturers were to insist on having their rubber shipped as they want it and if a white list were made of companies who pay attention to these matters, the situation would very quickly alter.



Closed — Open for Packing — Packed — Open for Inspection

The Bale Case Has Many Features of Practical Value

SILICA SMOKE

Silica smoke is produced from pure flint or silica rock reduced to such condition of fineness that the product may be air floated as a smoke or dust of about 300 mesh which is suitable as an inert filler for rubber mixings and other compositions. It is particularly valuable in making phonograph records where it is desirable to transfer the wear from record to needle.

The Editor's Book Table

"PARA RUBBER—A REPORT ON PARA RUBBER IN UGANDA." By Herbert Ashplant, A. R. C. S. Published by the Department of Agriculture, Kampala. Paper, 6 by 10 inches.

This comprehensive report concerning the cultivation of Pará rubber in a British protectorate of Central Africa contains some valuable information and interesting statistics. The author's conclusions are that the existing estates should be cultivated, although both in growth and yielding qualities the Uganda trees are inferior to their Malayan rivals. The labor question, too, presents certain difficulties. While the prospects for the small planter are not encouraging, an estate with a minimum of 100 acres, particularly with an intercrop of coffee, should give good results. There are at present approximately 17,000 acres in Uganda planted to rubber.

REPRINT AND CIRCULAR SERIES OF THE NATIONAL RESEARCH Council. No. 35. Washington, D. C. Paper, 37 pages.

This is an exhaustive list of fine and research chemicals of American manufacture, with references to the American firms producing them commercially.

"THE YEAR BOOK OF THE NATIONAL ASSOCIATION OF COTTON Manufacturers and Cotton Manufacturers' Manual—1922." Prepared by The National Association of Cotton Manufacturers, Boston, Massachusetts 249 pages. Cloth, 6 by 9 inches.

In this well-known publication, the fifth of the series, the first division is devoted to listing the active, associate, life, and sustaining members, and also includes the association's constitution, charter, and by-laws. In the second division, or the manual, are many interesting items regarding the cotton industry both in this country and abroad, accompanied by some useful tabulations, graphs, and diagrams. The book contains a good review of the cotton trade in 1921, while another short article represents a summary of the last five American cotton crops (1917 to 1921 inclusive).

"DUST EXPLOSIONS—CAUSES AND METHODS OF PREVENtion." By David J. Price, engineer in charge of dust explosion investigations, United States Department of Agriculture, and Harold H. Brown, Bureau of Chemistry, United States Department of Agriculture. Assisted by Hylton R. Brown and Harry E. Roethe, assistant engineers in dust explosions, Bureau of Chemistry. Published by National Fire Protection Association, Boston, Massachusetts. Cloth, 246 pages, 6 by 9 inches.

This volume sums up the work accomplished along these lines by the United States Department of Agriculture which, through its Bureau of Chemistry, has been making special studies of the subject since the year 1914. Some of the chapters are: "Nature and Theory of Dust Explosions," "Industries Producing Dust and Their Extent," "Phenomena of Explosions," "Causes of Dust Explosions and Elimination of Sources of Ignition"; while particular attention is given to a discussion of static electricity which is known to have caused fires and explosions in spreader plants. Mention of accidents occurring in recent years in industrial plants includes brief accounts of dust explosions in certain rubber reclaiming plants. The volume is well illustrated, while a bibliography covering the period from 1875 to the present time includes a number of articles and various reports.

"WORLD METRIC STANDARDIZATION: AN URGENT ISSUE." Compiled by Aubrey Drury, in collaboration with various members of The World Metric Standardization Council. Published by The World Metric Standardization Council, San Francisco, California. 524 pages. Cloth, 6 by 9½ inches.

In this volume the author discusses with thoroughness a subject which, for a number of years, has been under consideration by thoughtful men. The statement is made that the question of metric standardization was brought especially to the front in the World War, and that it is one which to-day concerns not only the manufacturer, the commercial organization, the importer and the exporter, but the educator and the scientist as well.

In upholding the claims for the metric system, the author quotes men of prominence throughout the country, several officials connected with the rubber industry being represented, and he also gives in full a number of articles dealing with the subject. It is said that when the British Commonwealths and the United States of America have adopted this "standardization of standards," the world will be upon a uniform metric basis. The volume is illustrated and well-indexed.

"FACTS AFFECTING THE IMPORTATION OF RUBBER PRODUCTS into Greece and British South Africa." Separate monographs prepared by the Rubber Division, Department of Commerce, P. L. Palmerton, chief. Published by Bureau of Foreign and Domestic Commerce, Washington, D. C. Paper, 8 by 9 inches.

In both of these countries where there is little or no rubber manufacturing, rubber goods must be imported, and in the case of the United States at least, since 1914, there has been a more or less steady sales increase. In British South Africa this has been particularly the case, where our tire exports held, in 1920, the first place, declining, however, to third place in the following year. Advancing again during the first four months of the present year, our exports of automobile tires to British South Africa have nearly equaled our total tire exportation to that country for the year 1921. During February, British South Africa stood second on our list as a purchaser of mechanical rubber goods, belting, hose, and packing.

New Trade Publications

AN ILLUSTRATED CIRCULAR, DESCRIPTIVE OF "THE VAMP, OR Tennis Shoe DeLuxe," is being sent out by the manufacturers, The Cambridge Rubber Co., Cambridge, Massachusetts. This particular style of summer footwear appears with black or brown sport trim, and with corrugated or smooth finish white rubber soles.

IN A WELL ILLUSTRATED CATALOG, ENTITLED "UNIVERSAL MIXing and Kneading Machines," are set forth the various products of the Werner & Pfleiderer Co., a division of the Baker-Perkins Corporation, Saginaw, W. S., Michigan. Among the nine types of machines represented is a masticator, built in two sizes, and especially equipped for compounding rubber and masticating heavy materials. The catalog states that these machines are useful not only for such purposes, but also in the preparation of artificial rubber, rubber cements, and packings. The company's sole sales agent is Joseph Baker Sons & Perkins Co., Inc., 25 West 43rd street, New York, N. Y.

AN ILLUSTRATED AND WELL ARRANGED CATALOG HAS BEEN REcently prepared by The Westinghouse Electric & Manufacturing Co., Automobile Equipment Department, with main office at 110 West 42nd street, New York, N. Y.

The booklet sets forth the products of the automotive equipment works at Springfield, Massachusetts, a plant built in recent years to supplement the already existing factory at Newark, New Jersey. The products include starting motors, lighting generators, battery ignition, engine castings, bakelite-micarta gears, instruments, accessories, and other products for automobiles, airplanes, trucks, motorboats, and tractors.

AN ATTRACTIVE CATALOG PRINTED IN COLOR AND ENTITLED, "GOODrich Rubber Sundries for Home and Hospital," describes some of the special products manufactured by The B. F. Goodrich Co., Akron, Ohio. Special reference has been made to the interests of druggists, and an advertising set for their use is featured.

A NEW BULLETIN ENTITLED, "SYNCHRONOUS MOTORS," ISSUED by the Allis-Chalmers Manufacturing Co., Milwaukee, Wisconsin, contains important data regarding the subject in question, while there are also many illustrations representing some of this company's important installations. Among them is shown a 1,000

KV-A., 120 R. P. M. synchronous motor driving a rubber mill line shaft; another represents a 500 h. p., 2,200 volt, 450 R. P. M. synchronous motor equipped for a rubber mill drive; while a third shows, in a tire factory, a 650 h. p., 2,300 volt, 1,200 R. P. M. synchronous motor, coupled to an 11,000 gallon centrifugal pump. A short article, with diagrams, included in this bulletin, and entitled, "The Use of Synchronous Motors for Improvement of Power Factor," should be of assistance to the engineer.

THE LATEST EXPORT CATALOGS OF THE MILLER RUBBER CO. OF New York, Akron, Ohio, are most attractive, as they are well arranged, illustrated in color, and published in English, French, and Spanish. The Miller products are druggists' rubber sundries, tires and tire accessories, and surgical and miscellaneous rubber goods. The catalogs contain a class index of the many products featured, while an export price list, with other information, will be sent to those interested.

AN INTERESTINGLY ARRANGED AND WELL ILLUSTRATED CATALOG, entitled, "Condensite in the Automotive Industry," explains some of the many uses and chief characteristics of this important product. Condensite is only one of many commodities manufactured by The Condensite Company of America, Bloomfield, New Jersey.

UNDER THE TITLE "SYLPHON HEATING SPECIALTIES," SOME valuable information has been prepared in a small catalog recently issued by The Fulton Co., Knoxville, Tennessee, regarding their particular products: temperature and pressure controlling instruments, valves, etc. Sections devoted to "Sylphon" temperature regulators, expansion joints, and pressure reducing valves, contain many items of interest.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

(21) Inquiry is made for addresses of manufacturers of inflatable mattresses, animals, fish, etc., used by bathers for surf riding and reclining on the water.

(22) A manufacturer desires the addresses of makers of rubber reducing garments buttoning up snugly at the neck.

(23) Request is made for the addresses of manufacturers of machines for trimming rubber heels.

(24) A reader desires the addresses of manufacturers of molds for making rubber plungers, toys, etc.

(25) The addresses of manufacturers of composition rubber belts for men are desired by a southern concern.

(26) A subscriber inquires for the addresses of manufacturers of equipment for producing rubber cement from uncured mixed rubber.

(27) A western reader requests the addresses of concerns handling cotton linters, clean mill run.

(28) A subscriber asks for the addresses of manufacturers of machines for simultaneously crimping and vulcanizing rubber dam at legs and waist of infants' rubber pants.

(29) A manufacturer requires the addresses of concerns marketing a power-driven machine for putting up tire plies in well centered rolls preparatory for use on a tire building machine.

(30) Request is made for addresses of manufacturers of rubber graining tools and combs and steel graining combs.

(31) A western dealer desires the addresses of manufacturers of hard rubber trusses for rupture.

(32) An inquiry has been received as to the source of supply for soap for molds.

(33) A dealer in scrap material requests the addresses of possible purchasers of old hard rubber gears and disks from water meters.

(34) Inquiry is made for the addresses of manufacturers of machines for inserting elastic at waist and legs of infants' rubber pants.

Foreign Trade Opportunities

Addresses and information concerning the inquiries listed below will be supplied to our readers through the Foreign Trade Bureau of The India Rubber World, 25 West 45th street, New York, N. Y. Request for each address should be on a separate sheet and state number.

(2581) Firm in Scotland desires to buy toys and novelties of all kinds. Quote c. i. f. Scottish port. Cash against documents.

(2587) American citizen engaged in mining and trading in Siberia wishes agency for rubber boots and raincoats. Cash with order.

(2639) Merchant in South Africa desires agency for sale of fountain pens and rubber daters.

(2671) Commission merchant in Mexico desires to purchase 20,000 raincoats. New or reclaimed army goods considered. Quote f. o. b. shipping point. Cash against documents through bank. Samples, prices and time of delivery desired.

(2678) Commercial representative in Mexico desires to secure agency for rubber toys and novelties. Quote f. o. b. place of shipment.

(2752) Company in Italy desires agency for transmission belts. Quote c. i. f. Italian port.

(2756) Dealers in tires, tubes, etc., in Siberia desires to represent manufacturers, all makes.

(2788) Firm in Norway desires to secure agency for men's and women's high and medium grades of white canvas, tennis, and football shoes. Payment through banks in Norway and New York.

(2834) Mercantile firm in Italy wishes agency for scientific apparatus and supplies, and fountain pens. Correspondence, Italian or French.

(2866) Commercial agent from South Africa is in the United States to secure agencies for sale of vulcanized rubber for industrial purposes.

(2873) Manufacturer in Denmark wishes to purchase from American manufacturers glass forms for use in making rubber nipples.

(2910) Stationery firm in Spain desires to buy fountain pens. Give quotations by parcel post.

(2917) Merchant in England desires to purchase ear, dental, and nasal syringes. Quote c. i. f. Liverpool or Manchester.

TRADE OPPORTUNITIES WITH THE DUTCH EAST INDIES

The Division of Commerce, Buitenzorg, Java, acts as a clearing house of information and advice for manufacturers and export traders and for prospective purchasers of that country's produce. Data will be supplied by this bureau as its primary purpose is to facilitate commercial relations with foreign countries. J. H. Muurling is in charge of the offices of the Netherland Indian Government, 44 Beaver street, New York, N. Y.

PRODUCTION OF GROUND TALC

Figures prepared by the United States Geological Survey show that the quantity of ground talc sold by producers in 1921 was 106,900 tons, valued at $1,181,000, as compared with 178,500 tons, valued at $2,143,000, in 1920. The rubber industry consumed in 1921 for filler about 9½ per cent of this total, the supply, coming mainly from Vermont, being valued at approximately $9.50 a ton. The textile industry used about 4 per cent as a filler for cotton cloth, the average value being about $9.40 a ton. In 1920 the United States furnished about 65 per cent of the world's supply of talc, and consumed about 68 per cent.

A Glossary of Words and Terms Used in the Rubber Industry—XVII[1]

Pneumatic Tires—Additional Definitions[2]

By Henry C. Pearson

S. A. E. Society of Automotive Engineers. An American organization of engineers whose original aim was to standardize the construction of internal combustion engines for automotive purposes, but the scope of whose work now includes also standardization of tires, rims, and other essential features of passenger automobiles and motor trucks. S. A. E. specifications for tires have been accepted and indorsed by The Rubber Association of America for standard manufacturing practice.

S. S. See Straight Side.

SEAT. The channel on the outer periphery of a rim in which a tire rests; a rim base. See Rims.

SEAT DIAMETER. The diameter of the rim or inner side of a casing; the nominal diameter and the larger factor in rating tire sizes by the metric system. See Size.

SEMI-CURE. To partially vulcanize. In repair, the premature surface drying of cement on a part exposed to the sun, excess heat, or strong draughts. Indicated by crusting, glazed appearance, and non-evaporation of the solvent beneath.

SERIAL NUMBER. A number impressed in relief by a metal tag on the sidewall of a casing during vulcanization. To the manufacturer it epitomizes in code the history of the tire: when made; of what materials; on what machines; and by what workman; and to the buyer in identifying a stolen tire. See Adjustment, Brand.

SERVICE. Work done or assistance given by a tire dealer or repairman gratis or at a nominal charge. Includes tire and rim changing, inner tube removal, inspection for tire, tube, or rim injuries, testing for air pressure, inflating tubes, and such care and counsel as will aid tire users in getting maximum mileage.

SET-UP. The complete assembly and application of materials and appliances requisite for the vulcanizing.

SEWING PROCESS. A method of stitching a break in the plies of a tire, as with a cobbler's outfit; now superseded by insertion of layers of fabric in graduated sizes. See Sectional Repair, Stepping Out.

SHIPMENT. A standard commercial practice term denoting tires or other goods forwarded directly to a purchaser, but excluding stock forwarded to a warehouse, branch, or on a consignment basis, or sent abroad.

SHOULDER. The outer part of a tire next to the road surface where the tread thickness is usually much reduced; commonly opposite the edge of the breaker strip and generally more pronounced in non-skid than in plain tread tires.

SHOULDER-BREAKING. Rupture of a casing below the shoulder. See Shoulder.

SHY SIDE WALLS. A manufacturing defect usually due to incrustation on cores, which prevents the mold from closing and allows an overflow of rubber about the center line of the tread, thus leaving too little for the sidewalls. A condition also due to the use of friction or skim-coated fabric of minus gage thickness in carcass building. See Side Wall.

SIDE WALL FUNCTION. The purpose of the side wall is to protect fabric plies or cord fabric layers against chafing and moisture, and to afford flexible reinforcement. See Side Wall.

SIZES.

FLAP (Butt-End) Sizes. Flaps with ends cut flush so that they may be butted in applying are made in the following sizes, conforming to casings of like measurement:

34 x 5	38 x 7	42 x 9
36 x 6	40 x 8	44 x 10

FLAP MATERIAL SIZES. Rubberized fabric suitably molded and with skived edges in rolls. The material is usually made in widths of 3¼, 4, and 5 inches.

FLAP SIZES. The proper fitting of flaps for the protection of inner tubes involves conforming them snugly to a casing and fitting them so that their edges will in all cases be approximately even with the top of the flanges of the rim on which the casing sets. Flaps are made in a large number of sizes, allowance being made for differences in internal contour of cord and fabric casings. Thus a 33 by 4 tire requires a different width of flap when used on a 32 by 3½ rim (2-20/64 inches wide) than when used on a 33 by 4 rim (2-44/64 inches wide). Flaps are accordingly supplied to fit exactly in the following sizes and types of tires when placed on the rims of the size and type set opposite to the tires in the following scale:

PASSENGER CAR TIRE FLAPS

Tire Size	Tire Type	Rim Size	Rim Type
30 x 3½	S. S. Cord	30 x 3½	S. S.
32 x 3½	S. S. Cord	32 x 3½	Q. D.
32 x 3½	S. S. Fabric	32 x 3½	Q. D.
32 x 3½	S. S. Fabric	32 x 3½	S. S.
32 x 3½	S. S. Cord	32 x 3½	S. S.
31 x 4	S. S. Cord	30 x 3½	S. S.
32 x 4	S. S. Cord	32 x 4	S. S.
32 x 4	S. S. Fabric	32 x 4	S. S.
32 x 4	S. S. Cord	32 x 4	Q. D.
33 x 4	S. S. Cord	32 x 3½	S. S.
33 x 4	S. S. Cord	32 x 3½	Q. D.
33 x 4	S. S. Fabric	32 x 3½	Q. D.
33 x 4	S. S. Fabric	32 x 3½	S. S.
33 x 4	S. S. Cord	33 x 4	S. S.
33 x 4	S. S. Fabric	33 x 4	S. S.
34 x 4	S. S. Cord	34 x 4	Q. D.
34 x 4	S. S. Cord	34 x 4	S. S.
34 x 4	S. S. Fabric	34 x 4	S. S.
34 x 4	S. S. Fabric	34 x 4	Q. D.
32 x 4½	S. S. Cord	32 x 4½	S. S.
32 x 4½	S. S. Fabric	32 x 4½	S. S.
33 x 4½	S. S. Cord	32 x 4	S. S.
33 x 4½	S. S. Fabric	32 x 4	S. S.
33 x 4½	S. S. Cord	33 x 4½	S. S.
33 x 4½	S. S. Fabric	33 x 4½	S. S.
34 x 4½	S. S. Cord	33 x 4	S. S.
34 x 4½	S. S. Cord	34 x 4½	Q. D.
34 x 4½	S. S. Cord	34 x 4½	S. S.
34 x 4½	S. S. Fabric	34 x 4½	S. S.
35 x 4½	S. S. Cord	34 x 4	Q. D.
35 x 4½	S. S. Cord	34 x 4	S. S.
35 x 4½	S. S. Fabric	34 x 4	S. S.
35 x 4½	S. S. Fabric	34 x 4	Q. D.
36 x 4½	S. S. Cord	36 x 4½	Q. D.
36 x 4½	S. S. Cord	36 x 4½	S. S.
36 x 4½	S. S. Fabric	36 x 4½	S. S.
36 x 4½	S. S. Fabric	36 x 4½	Q. D.
33 x 5	S. S. Cord	32 x 4½	S. S.
34 x 5	S. S. Cord	33 x 4½	S. S.
35 x 5	S. S. Cord	34 x 4½	Q. D.
35 x 5	S. S. Cord	34 x 4½	S. S.
35 x 5	S. S. Fabric	34 x 4½	S. S.
35 x 5	S. S. Fabric	34 x 4½	Q. D.
37 x 5	S. S. Cord	36 x 4½	Q. D.
37 x 5	S. S. Cord	36 x 4½	S. S.
37 x 5	S. S. Fabric	36 x 4½	S. S.
37 x 5	S. S. Fabric	36 x 4½	Q. D.

[1] Continued from THE INDIA RUBBER WORLD, July 1, 1922, pages 671-672.

[2] Copyright by Henry C. Pearson. May be reprinted with credit to the author.

TRUCK TIRE FLAPS

Tire Size	Tire Type	Rim Size	Rim Type
34 x 5	Cord	34 x 5	S. S.
36 x 6	Cord	34 x 5	S. S.
36 x 6	Cord	36 x 6	S. S.
38 x 7	Cord	36 x 6	S. S.
38 x 7	Cord	38 x 7	S. S.
40 x 8	Cord	38 x 7	S. S.
40 x 8	Cord	40 x 8	S. S.
42 x 9	Cord	42 x 9	S. S.
44 x 10	Cord	44 x 10	S. S.

INSIDE BLOWOUT PATCH SIZES. Inside blowout patches are commonly made in 3, 3½, 4, 4½, and 5-inch sizes, with varying lengths. See Blowout Patch.

MOTORCYCLE RACING TIRES. Tires for motorcycles used in racing, and having a cross-section size of 1¾, 2, and 2¼ inches.

MOTORCYCLE REGULAR TIRES. Tires ordinarily used on motorcycles other than those used for racing and having a cross-section measurement of 2¼, 2½, 2¾, and 3 inches.

MOTORCYCLE UNUSUAL TIRES. Casings made for exceptional requirements and generally measuring 28 by 2½, 28¾ by 2¾, and 29 by 2¾. See Sizes.

NOMINAL TIRE DIAMETER. The indicated diameter of a tire, from which a slight variance is usually allowed for in precise measurement. In standard American practice, the distance across the center of a tire from the tread surface at opposite sides; the maximum or outside diameter; and the larger factor in rating tire sizes by inches, as 30 in a size 30 by 3½ tire.

NORMAL TIRE SIZES. Standard S. A. E. tire sizes in inches or millimetric equivalent, as contrasted with oversizes. See Oversize.

OCCASIONAL OR ODD SIZES. Tires of non-standard measurement, the making of which has been discontinued.

RELINER SIZES.

Tire Size	Fabric Plies	Width, Inches
28 x 3	3	6¾
30 x 3	3	7¾
30 x 3½	3	8¾
32 x 3½	3	8¾
31 x 4	4	9¾
32 x 4	4	9¾
33 x 4	4	9¾
34 x 4	4	9¾
34 x 4½	4	10¾
35 x 4½	4	10¾
36 x 4½	4	10¾
35 x 5	4	11½
37 x 5	4	11¾

RESTRICTED SIZES. The sizes, the making of which was discontinued during the war by the United States War Service Committee.

SKIM COAT. To apply a thin coat or sheet of rubber to one or both sides of a frictioned fabric.

SKIVED FABRIC SHOES. Reliners molded for casings with edge shaved to a feather edge. The inner or concave side is often coated with canton flannel or other soft fabric to prevent friction with the tube, the outer or convex side being coated with self curing cement to make it adhere to the carcass. See Shoe Liners.

SOAPSTONE. A massive variety of talc; steatite, a mineral having a stearin or tallow-like feel, much used in powdered form to prevent rubber surfaces from sticking to one another, and applied with water as a stiff paste and covered with a heat cloth to preserve tread designs in vulcanizing. See Talc.

SOFT CURE. A repair term for an undercure; a condition in which rubber is more plastic than elastic. See Vulcanization.

SOLVENT. One of a numerous class of volatile fluids used in rubber manufacture and repair for making solution or cement and including gasoline, benzine, benzol, solvent naphtha, carbon disulphide, and carbon tetrachloride.

TACKINESS. Stickiness or adhesiveness. The state of a surface coated with solution or cement, in which drying has progressed sufficiently to enable such surface to cling to another without the coating stringing off; a condition requisite to effective primary union of plies, patches, etc., in repair. See Cement.

TAPE. Strips of paper made from manila hemp or other tough material used in spirally wrapping finished tires to exclude dust, light, grease, etc., in shipping or storing.

TEARING DOWN. Removal of damaged material in a casing, or the stepping out of plies, the laying back of tread, cutting down of sidewall, skiving, buffing, etc., preparatory to building up a sectional repair. See Repair.

TEMPERATURE TEST. Determination of the degree of heat generated in a tire while in active use. Two methods are used, one employing an instrument termed a thermoelectric pyrometer, terminals of which are thrust into various parts of a tire, readings being taken on an instrument called a potentiometer; and the other method being that of calculating the tire temperature by the gas pressure (air expansion) in the inner tube as influenced by the heat developed in the tire while in motion. Both methods substantially prove that more heat is developed in the carcass than in the tube and that most of the heat is conducted out through the tread to the air and the road.

TIRE CORD FABRIC. A fabric consisting of hawser cord yarn in the warp, with single yarn filling at intervals to keep warp threads together.

TIRE PEELING. Stripping of a tread from a casing for a retread, or the pulling of layers of square-woven fabric or plies of cord fabric from a discarded or adjusted casing.

TIRE RATING (1). In railroad freight practice, the classifying of tires for shipment according to carload or less than carload lots, the carrying charge for the latter being more than the former. Recent United States freight tariffs permit of the shipment of pneumatic tires in paper-wrapped bales or bundles in less than carload lots at first class rating, and in carload lots at third class rating. See C. L. and L. C. L. (2). The specific or ad valorem duty imposed by a government on tires imported or exported.

TIRE SAVER PATCH. A short, ready cut fabric section for emergency repair. See Patch.

TREAD TURNBACK. A method of repairing tread blowouts and tread fabric cuts by eversion of the tread during repair.

TUBE FILLER GUM. See Filler Gum.

TUBE PINCHING. See Pinching.

TWO-CURE TIRE. A tire which has had its carcass semi-vulcanized before cushion, breaker, undertread, and tread have been applied, and after which it is given a second and complete curing. See Combination Cure.

UNDERTREAD. See Undercover.

WEIGHT. The weight of tires varies with the size, construction (smooth tread, non-skid, fabric, or cord) and the quantity and character of the materials used in manufacture. Approximate weight of various sizes is as follows:

Tire Size	Rim Style	Weight in lbs. Fabric	Cord
30 x 3	Cl.	10½	....
30 x 3½	CL.	13	16
32 x 3½	SS.	13½	22
31 x 4	Cl.	16½	....
31 x 4	SS.	....	23
32 x 4	SS.	17	24
33 x 4	SS.	17½	25
34 x 4	SS.	18½	26
32 x 4½	SS.	....	32
33 x 4½	SS.	....	33
34 x 4½	SS.	....	34
35 x 4½	SS.	25½	34½
36 x 4½	SS.	....	36
33 x 5	SS.	....	38
35 x 5	SS.	....	39
37 x 5	SS.	....	43

WIPING LIQUID. A rubber solvent as cleansing fluid used by tire makers and repair men; ordinarily, gasoline, benzine, or naphtha.

WIRED-ON TYRE. Term applied to the British straightside tire with wire-reinforced, inflexible, inextensible bead, first used on bicycles in 1884.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" should be in the library of every progressive rubber man.

Making Inner Tubes by Tubing Machines

Rolling Inner Tubes—The Tubing Method—Machine Installations—Die and Head —The Conveyor—Advantages Gained

Rolling Inner Tubes

THE well known and customary way of making inner tubes consists in building up sheet stock on the calender by plies to the requisite gage. This stock is then rolled on shells in a cotton liner and taken to the making room where it is cut as needed in suitable lengths to fit the mandrels. Then the sheets of

Fig. 1. Tubing Machine with Cooling Tank and Conveyor

tube stock are rolled up on tube mandrels by hand on a padded table or rolled on the pole in a three-roll machine after the manner of making a common hose.

The Tubing Method

This method is fairly rapid but rather expensive as to labor cost. This item has become so important a factor in competition that the more progressive manufacturers are coming to use the method of tubing inner tubes direct from the stock batch. In

Fig. 2. Tubing Machine Delivering Stock for Poling or Booking Direct

this way all calender work, cutting and rolling is avoided and the tubes can be poled for curing directly they are tubed and cooled.

Machine Installations

The arrangement of the tubing machine for producing inner tubes is the same as for tubing tire treads and is shown in Fig. 1. In this instance the machine is producing treads but by change of die and connecting a soapstoning head, inner tubes can be run. As the product leaves the tuber it is hardened by passing through a tank where it is water cooled before passing onto the belt conveyor for passage to an upper floor for poling, wrapping and curing and the subsequent finishing and splicing operations.

Another arrangement of the tuber is shown in Fig. 2, where the tubed stock is transferred to books. Treads are being run in this case also, and no conveyor is used. In this arrangement inner tubes would be poled at the machine as run.

Die and Head

The internal arrangement of tubing head and die for producing inner tubes is illustrated by Fig. 3 which shows a longitudinal section. At the right is the spider or bridge into which the mandrel screws for determining the internal diameter of the tube. There is a hole through the entire length of the mandrel for the passage of soapstone dust by air blast for the purpose of dusting the tube internally to prevent adhesion of the walls while tacky and uncured.

The soapstone supply is contained in a special tank usually located under the head of the tuber where the outlet of dust can be conveniently controlled by the operator.

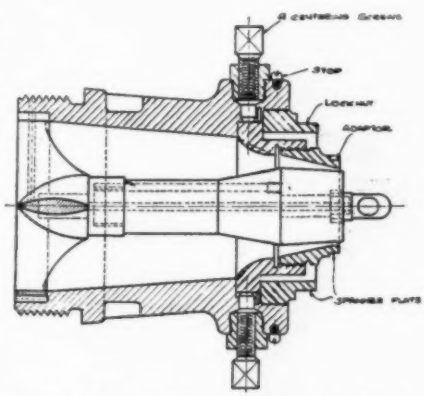


Fig. 3. Section of Die and Head for Inner Tubes

The outer end of the mandrel is given a peculiar shape for the purpose of aiding in the compression of the stock as it enters the die which in the figure is called an adaptor. Both the adaptor and the end of the mandrel covered by it are distinctly tapered, to shape and compress the stock which makes its exit from the machine through an annular space with very short parallel walls.

Tubing Machine Conveyor

A very convenient electrically driven conveyor for use in removing tubing machine product, whether inner tubes, treads or other forms, is illustrated in Fig. 4. It is substantially built of metal and is provided with means for adjusting its speed to accommodate the output of the tuber. By the use of such a conveyor the stock can be handled more readily by the helpers and much loss of scrapped product can be avoided.

Advantages Gained

With an arrangement such as this the output of tubes is very rapid and exact to size, free of included air and with walls of exact thickness. The chief advantage is, of course, the great saving effect in labor expense, increased output, and no loss if not a gain in quality.

[1]The illustrations and data used in this article were furnished by the Allen Machine Co., Erie, Pennsylvania.

The tubing machine method of making inner tubes is certain to gain in popularity with manufacturers on account of its economy feature as soon as their compounders and rubber workers gain

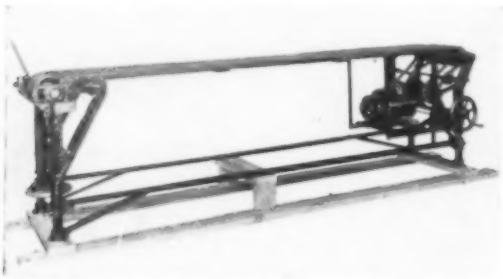


Fig. 4. Electrically Driven Conveyor for Tubing Machine Work

the experience necessary to handle pure stocks successfully in the tuber. The stock must be smooth running and stand considerable heat without scorching.

Interesting Letters from our Readers

Appreciation from the Babson Institute

TO THE EDITOR:

DEAR SIR: I am obliged to you for your kindness in sending us a sample copy of THE INDIA RUBBER WORLD for June 1, 1922.

I have read the entire issue with exceptional pleasure. You unquestionably issue one of the most carefully edited technical publications of which I have knowledge. You present a wealth of up-to-date information which should be of the utmost value to all concerned with the progress of the rubber industry. The paper is typographically the most practical, while the illustrations are carefully selected.

The Buyers' Directory is one of unusual completeness and while there is an abundance of advertising, it is not overdone.

The rubber statistics are sufficiently complete for all reasonable purposes excepting for South America. I have only recently returned from an extended trip to Bolivia and Brazil during which I had brought to me the matter of the inadequacy of our American understanding of the South American rubber situation.

I have instructed our treasurer to order THE INDIA RUBBER WORLD for my future use. I wish, however, that you would also send me a complete set of papers issued containing the glossary of words and terms used in the rubber industry. This is a most admirable enterprise which will be appreciated by those who deal with the technical aspects of the industry.

In conclusion permit me to congratulate you on the two admirable editorials on the "Loss Sharing Plan" and the "Standardization of Progress."

P. L. HOFFMAN,
Dean of Advanced Dept., Babson Institute.

Wellesley Hills, Massachusetts.

I. R. W. Editorial Valued by Safety Council

TO THE EDITOR:

DEAR SIR: It was with interest that I read the editorial on "Safety Work Pays Dividends," published in the July 1 issue of THE INDIA RUBBER WORLD. In behalf of the Rubber Section of the National Safety Council, I wish to thank you for your interest. The Rubber Section of the National Safety Council is accomplishing unusual results in the rubber industry. It is through editorials of this nature that we hope to increase our value.

E. W. BECK,
Secretary, Rubber Section, N. S. C.

Chicopee Falls, Massachusetts.

Pneumatic Piano Keys

TO THE EDITOR:

DEAR SIR: It seems to me, if it has not already been done, it would be a most excellent idea for some one to bring out a rubber-keyed piano. Figuring on the number of jolts the ordinary pedestrian receives daily from walking the pavements of the city was the reason for the rubber heel. Why has no one figured on the daily concussions sustained by the professional pianist's fingers? Not necessarily during his concert exhibitions but principally during home practice which requires hours of constant application. Really, is it any wonder that, if the performer does not break down with nerves, he at least is apt to become temperamental?

A soft covering of rubber would mean less finger-tip concussion and elimination of strain on wrist and forearm. Then, too, it would mean reduction in the rate of insurance on musical fingers which is so high today that it is quite prohibitive save to those who receive enormous salaries.

Please inform me if anything along this line has ever been attempted, and if so, why it has not been given more publicity.

Malden, Massachusetts. JOHN CHASE.

Chemical Policeman Defined

TO THE EDITOR:

DEAR SIR: Sometime ago mention was made in the columns of THE INDIA RUBBER WORLD of a "Policeman." The term refers, no doubt, to an instrument used in chemical work but why is it called a "Policeman"?

New York, N. Y. CURIOUS.

For the information of the reader of THE INDIA RUBBER WORLD who has inquired why a rubber-tipped glass rod is call a "policeman," this instrument is a well-known laboratory bench tool used by the chemist for rubbing from a beaker the last traces of any precipitate with which he may be working. This guarding of the determination from loss is where its function resembles that of a policeman, hence its name.—THE EDITOR.

The First Rubber Washer

TO THE EDITOR:

DEAR SIR: Will you kindly advise us when the first machine was used for washing rubber and, if possible, the inventor's name?

THE CHEMICAL RESEARCH CO.

The first user was Nathaniel Hayward, one of the earlier rubber experimenters. The two-roll washer now in use was an adaptation of Chaffee's two-roll mixing mill and was developed at the Roxbury Rubber Works in what is now a part of the plant of the Boston Belting Co.—THE EDITOR.

NITROGEN INFLATED TENNIS BALLS

A method has recently been patented[1] for inflating tennis balls and similar hollow articles to a definite pressure with nitrogen gas liberated by the heat of curing. The predetermined pressure of inflation is obtained by definite proportions of the reacting ingredients placed in the ball center previous to closing it. Oxygen may be used for inflation. A half dozen reactions are cited for the production of the gas although the usual one according to the formula is, $NH_4Cl + NaNO_2 = NaCl + N_2 + 2H_2O$.

In practice, between .5 and .7 g. of sodium nitrite to 6 g. of ammonium chloride are used in each ball. This gives about 22½ pounds pressure per square inch above the atmosphere.

This method avoids the necessity of using a non-vulcanizable rubber plug for sealing the perforation made by a hypodermic needle as in the case of air inflation, also the ball remains in perfect balance due to the absence of the plug or valve.

[1] United States patent No. 1,415,437.

What the Rubber Chemists Are Doing

Accelerators and Rubber Mixes[1]

By Joseph L. Rosenbaum

THE results of the attempts to vulcanize a mixture of synthetic pure rubber hydrocarbon and sulphur showed that the cure proceeds so slowly as to be valueless as a commercial process. It was suspected that the substances present in natural rubber, hitherto regarded merely as impurities, must be responsible for the difference in behavior between the natural and the synthetic products.

This theory was confirmed and it has been established that the portion of the organic matter in rubber which is insoluble in acetone but soluble in alcohol is the prime cause of the normal behavior of natural rubber in vulcanizing.

This important activating material contains nitrogen and is in fact protein. Like all proteins it readily splits up by heat, acids, or ferments into a number of decomposition products of a basic nature and it is these bodies which are considered to be the actual accelerators.

Pioneers of Accelerators

Many years previous to the granting of German patent No. 265,221 of 1912, to The Bayer Co., of Elberfeld, Germany, for the use of piperidine as an accelerating agent, certain organic accelerators of vulcanization were employed in the United States.[2] It should also be noted that the accelerating action of ammonia gas was recognized by an Englishman, Thomas Rowley, in 1881. Rowley, in patent No. 787 of 1881, announced that rubber and sulphur would vulcanize in an atmosphere of ammonia under pressure with less sulphur than is ordinarily required. A time saving was claimed with a product less liable to subsequent deterioration. As the greater number of accelerators known today are organic derivatives of ammonia, the patent of Rowley acquires great historic interest.

The modern development of the study of organic accelerators dates from the Bayer patent of 1912. The first Bayer patent was followed by several others claiming the use of the non-volatile derivatives of piperidine and similar bodies. The work culminated in a most remarkable patent[3] in which The Bayer Company claimed the application as vulcanization accelerators of all organic bases, other than those which liberate ammonia under vulcanizing conditions, characterized by possessing dissociation constants higher than 10×10^{-8}.

Accelerene

Peachey in 1914[4] discovered the excellent accelerating properties of nitroso derivatives of various aromatic compounds. Nitroso-dimethyl-aniline proved the most active of these and is now supplied under the trade name of "Accelerene." This class of compounds is exceptional as its accelerating properties are connected directly with the nitroso group, and not with basicity as is the case with practically all other accelerators that have been proposed.

Dr. Philip Schidrowitz has proposed to form the accelerator in colloidal clay and has patented such a method for producing active compounds from piperidine and carbon bisulphide[5].

Colored Bases as Accelerators

The author, in January, 1919, discovered the powerful accelerating properties of some of the color bases of the basic organic dyes. A mixing containing one per cent of methyl violet and three of sulphur, cured for one hour at 287 degrees F, came out fully vulcanized and with color unchanged. Without the color base three hours were required for the same cure. The accelerating action of the color base of auramine is very pronounced, being fully equal to that of any basic accelerator but all traces of color vanish in the cure.

Other color bases were found which preserve their color during the vulcanization process but which exert an insignificant accelerating action. All the color bases of the basic dyestuffs accelerate the vulcanization of rubber or color the vulcanized product[6].

The Action of Accelerators

The study of the mechanism of the action of organic accelerators during the vulcanization process has received much attention in recent years in England, America, France, and Italy. Much progress has been made. Much yet remains obscure. However, it is certain that no generalized mechanism of action capable of application to every accelerator can be formulated and that accelerators usually behave quite differently in pure rubber-sulphur mixings to what they do in mixings containing inorganic oxides. This is particularly the case with zinc oxide.

Relative Advantages

The degree of vulcanization of a rubber mixing can be measured either by the determination of sulphur in combination with the rubber coefficient of vulcanization, or by measuring the physical properties of the product. Both methods are important, the former especially when information as to behavior on aging is sought.

In the case of a pure rubber-sulphur mixing physical improvement proceeds with increase in the vulcanization coefficient up to a certain point, when further vulcanization occasions a weakening of the product.

When such a mixing is vulcanized in the presence of an organic accelerator until the physical properties are equal to those of a similar unaccelerated mixing, it is found that the sulphur gone into combination in the accelerated mixing is considerably less than that in the unaccelerated product. This is especially the case in the presence of zinc oxide and seems to be a general property of the organic accelerators.

The physical properties of the mixing are modified during vulcanization to a greater extent than the combination with the sulphur is hastened. This seems to imply that some reaction takes place between the rubber and the accelerator without the intervention of the sulphur, but numerous experiments have failed to confirm this view.

Reaction Between Accelerator and Sulphur

The general opinion at present is that reaction takes place between the sulphur and the accelerator, or the decomposition products of the accelerator, or the zinc compounds of such products, whereby polysulphides, or compounds containing chains of sulphur atoms, are formed. These sulphur compounds then split off the greater part of their sulphur in a specially reactive form available for vulcanization.

What the exact nature of this active form of sulphur is, whether

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[1]Abstract of a paper read before the Institution of Rubber Industry, Manchester District, England, February 6, 1922. The Rubber Age, London.

[2]"The laboratory record books of The Diamond Rubber Co., Akron, Ohio, which was later consolidated with The B. F. Goodrich Co., show that George Oenslager early in 1906 experimented with aniline oil, and a long list of other organic compounds, with the definite purpose of hastening the time of vulcanization. In June of that year Arthur H. Marks directed its use in factory formulas, and in February, 1907, he used thiocarbanilide." "Recent Developments in the Chemistry of Rubber," by William C. Geer.

[3]German patent No. 280,198, of 1914.

[4]British patent No. 4263.

[5]British patent No. 170,682.

[6]This discovery forms the subject matter of British patent No. 141,412 of 1919, Rosenbaum and Gaisman.

colloidal or monatonic, is uncertain. Bedford and Sebrell[7] hold that the sulphur active for vulcanization is thiozone, that is, a molecule containing three atoms of sulphur, bearing the same relation to ordinary sulphur that ozone bears to oxygen. They claim that it is thiozone which is formed by the interaction of sulphur dioxide and hydrogen sulphide as in Peachey's cold-cure process, and also that they have actually prepared this substance and vulcanized rubber with it at the ordinary temperature. It is now established that the heat evolved by the reaction between the accelerators and sulphur or zinc compounds is too small to affect the speed of the vulcanization process.

Functions of Accelerators

The chief functions of accelerators of vulcanization are: reduction of the vulcanization period from two-thirds to five-sixths; improvement of the tensile properties and aging qualities of the products; and elimination of sulphur bloom on the goods.

The total prevention of sulphuring up requires the almost complete combination of rubber and sulphur. This is rendered practicable by the reduction of the free sulphur to a minimum, the use of an organic accelerator, and a vulcanization operation of reasonable duration.

Accelerators for Black and Colored Goods

By using nitroso-dimethyl-aniline to the extent of 0.3 to 0.5 per cent upon the weight of the mixing, non-blooming, cheap and moderately cheap blacks which could not be obtained in any other way have been regularly produced with the use of free sulphur and without the use of litharge.

Another application of accelerators, closely related to the prevention of blooming, is in the manufacture of cables, for the elimination of free sulphur in the rubber sheath, the presence of which reacts injuriously on the copper conductor. For this purpose certain organic accelerators are largely used, both in America and Europe, with highly satsifactory results both as regards durability and electric insulation.

Special Accelerators for Special Results

In the selection of accelerators much depends upon the composition of the mixing, the purposes required, routine of the individual rubber works, and the aging qualities necessary in the finished articles. For example, with accelerene a very pale drab is almost invariably produced; consequently this accelerator is not suited to give snow-white vulcanized rubber. In such cases thiocarbanilide, aldehyde ammonia, and auramine base may be used. For blacks, grays, etc., the nitroso compound has proved eminently suitable. Hexamethylene tetramine, auramine base and thiocarbanilide in pure rubber-sulphur mixings require the presence of activating oxides, such as zinc oxide, for the maximum accelerating effect.

Temperature and After-Vulcanization

Accelerators vary as to the temperature at which they commence their action. The complex piperidine compounds are liable to cause trouble during the mixing operation by causing permature vulcanization, especially when zinc oxide is present.

Accelerators vary in their after-effects; some not only speed the cure at vulcanization temperature but continue to act when the temperature drops. At the present time the availability of accelerators which can be relied upon to operate only at the usual vulcanization temperatures is a great step in advance.

Generalizations

The higher the rubber quality of the mixing the greater is the probability of the accelerator exerting its maximum efficiency. The presence of zinc oxide is necessary for the majority of accelerators. The presence of inert fillers has no bad effect, in many cases the efficiency of accelerators is enhanced by a moderate amount of fillers. The presence of organic accelerators is particularly advisable in mixings containing oil substitutes as the latter tend to reduce the amount of sulphur available for vulcanization of the rubber, by exerting what is probably a solvent action towards it.

Relative Efficiency of Accelerators

No attempt is being made here to discuss in detail the relative efficiencies of the more important accelerators.

A remarkable increase in tensile strength is obtainable with one per cent of piperidine piperidyl dithiocarbamate, "Vulkacit," in a pure rubber-sulphur mix[8]. The unaccelerated showed a tensile strength of 1,290 pounds per square inch, elongation at break 875 per cent, and vulcanization coefficient of 4.31 as compared with the accelerated stock which showed 1,870 pounds tensile, 845 per cent elongation, and 3.72 coefficient.

One per cent hexamethylene tetramine was found to be only a very mild accelerator in the rubber-sulphur mix, the saving in time of cure being only one-third, and the vulcanization coefficient actually higher than the unaccelerated mix.

Thiocarbanilid has very feeble accelerating power in a mix devoid of zinc oxide.

Organic Accelerators and Aging

With the proper use of accelerators the aging properties of vulcanized rubber are considerably improved. Samples made with the aid of accelerene and not specially stored, show no signs of deterioration after five years. This is particularly noticeable with mixings containing appreciable amounts of lime or magnesia. The one vital requirement in an accelerator from an aging standpoint is that it should be under perfect control, and cease to function when the goods are finished.

Deleterious Effects on Health

The harmful effects of accelerators on health have, in the author's opinion, been greatly exaggerated. They should not be ignored, however, but with simple preventive measures, education of the workmen, and efficient supervision, they can be reduced to insignificant proportions.

[7] "Reactions of Accelerators During Vulcanization." THE INDIA RUBBER WORLD, February, 1922.

[8] "Ten Years' Experience with Aging Tests." By William C. Geer and Walter W. Evans. The India Rubber World, September 1, 1921.

Methods of Analysis

Estimation of Rubber as Tetrabromide[1]

By F. Utz

A weighed quantity of the caoutchouc tetrabromide is introduced into a globular flask of 100 to 150 cc. capacity. The flask is closed with a rubber stopper fitted with a tap funnel the stem of which nearly reaches the bottom of the flask and with a bent glass tube which is connected with a set of absorption bulbs.

The flask is immersed in a cold oil bath and a cooled solution of 1 to 1½ g. of silver nitrate and 4 to 8 g. of potassium bichromate in 40 cc. of concentrated sulphuric acid is cautiously introduced. After the introduction of the whole of this solution the bath is gradually warmed to 135 to 140 degrees C. After 45 minutes the reaction is ended and gentle suction is applied at the outlet of the absorption bulbs, the tap of the funnel now being opened, to carry over all the bromine.

The liquid in the absorption bulbs consists of 20 cc. of a mixture of 15 per cent sodium hydroxide solution with a saturated solution of sodium sulphite in equal volumes. After the reaction this reagent is transferred to a flask, strongly acidified with nitric acid and its bromine content determined.

[1] Gummi-Zeitung, 36,791-792, 1922.

Chemical Patents

The United States

DRY PROCESS ANTIMONY COLORS. Gold-colored sulphides and vermilion of antimony are made by melting natural sulphide of antimony in a closed vessel, and then passing a current of atmospheric air through the melted mass maintained at a temperature corresponding to the coloration desired for the sulphide to be obtained. The product has the formula S_2S_3 and comes either gold color or crimson in the state of powder and is collected in a settling chamber that allows only the gas given off in the reaction to escape.—Paul Chaillaux, Paris, France. United States patent No. 1,417,033.

CHEWING GUM BASE. This is produced from crude rubber by dissolving out the nitrogenous substances, removing the resulting solution from the rubber, and removing volatile substances by subjecting the rubber to heat and the action of inert gas.—Wallace A. Beatty, New York, N. Y. United States Patent No. 1,418,271.

FRICTION COMPOSITION FOR BRAKE LINING. Asbestos impregnated with a condensation product of phenol and methylene diphenyldiamine.—William Achtmeyer, Middletown, Connecticut. United States patent No. 1,418,607.

PROCESS OF MAKING A PHENOLIC CONDENSATION PRODUCT. Donald S. Kendall, East Orange, assignor to Condensite Co. of America, Bloomfield, both in New Jersey. United States Patent No. 1,418,718.

VULCANIZING ACCELERATOR. This comprises the base of the character produced by the reaction of one mol of paranitrosodimethylaniline with one mol of hydrogen sulphide.—Clayton W. Bedford and Robert L. Sibley, assignors to The Goodyear Tire & Rubber Co., all of Akron, Ohio. United States Patent No. 1,418,771.

VULCANIZING ACCELERATOR. A sulphur-nitrogen accelerator is produced by bringing together under reacting conditions sulphur and methylene diphenyldiamine.—Clayton W. Bedford, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio. United States Patent No. 1,418,772.

RUBBER ACCELERATOR. A vulcanization accelerator comprising a condensation product of para-toluidine and formaldehyde.—Ralph B. Naylor, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both in Massachusetts. United States Patent No. 1,418,824.

VULCANIZING RUBBER. Vulcanized rubber containing the reaction product of uncured rubber, sulphur, and phenylhydrazine.—Ralph B. Naylor, Springfield, assignor to The Fisk Rubber Co., Chicopee Falls, both of Massachusetts. United States Patent No. 1,418,825.

PHENOLIC CONDENSATION LAMINATED PRODUCT AND PROCESS. Applying to a sheet or fiber a sheet of material impregnated with a phenolic condensation product in its intermediate stage; subjecting the sheets to heat and pressure to cause permanent adhesion and change the condensation product to its final insoluble form.—John M. Taylor, Ardmore, Pennsylvania, assignor to Diamond State Fibre Co., Elsmere, Delaware. United States patent No. 1,418,891.

MANUFACTURE OF CAOUTCHOUC, ETC. A vulcanized rubber composition is produced by synthesizing an agent accelerating vulcanization upon a carrier to be incorporated with the rubber mixing.—Philip Schidrowitz, assignor of one-half to Catalpo, Limited, both of London, England. United States Patent No. 1,418,976.

GOLF BALL COATING MATERIAL. A quick drying material for coating golf balls adapted to be applied by dipping, consisting of soluble cotton, a solvent for the cotton, a pigment and a gum.—Oscar Hommel, Pittsburgh, Pennsylvania. United States Patent No. 1,419,258.

FRICTION FACINGS. The facings are formed from material containing asbestos fiber, saturated in a sulphurizable binder, subsequently baked in the presence of a sulphurizing agent at such temperature as to cause pronounced action between the sulphur and the binder, and subjected to a second saturation and baking.—F. C. Stanley, assignor to Raybestos Co., both of Bridgeport, Connecticut. United States patent No. 1,420,882.

The Dominion of Canada

VULCANIZING ACCELERATOR. An accelerator as ingredient in the process of vulcanizing comprising a tetra-alkylated thiuramidisulphide.—The R. T. Vanderbilt Co., New York, N. Y., assignee of Benjamin E. Lorentz, Toronto, Canada. Canadian patent No. 219,474.

CAOUTCHOUC PRODUCTS. Making vulcanized rubber by impregnating colloidal clay with piperidine, spraying the impregnated clay with carbon bisulphide, incorporating the product with a rubber mixing, and vulcanizing the mass.—Philip Schidrowitz and Catalpo Limited, assignee of one-half interest, both of London, England. Canadian patent No. 219,486.

MANUFACTURE OF RUBBER. The process comprises the incorporation with rubber mixing of colloidal clay in conjunction with an alkaline saponaceous material in the dry state.—William Feidenheimer, London; Walter W. Plowman, Surrey, and Philip Schidrowitz, London—all in England. Canadian patent No. 219,979.

PHENOL CONDENSATION PRODUCTS. A product of increased elasticity containing a mixture of amyl alcohol, camphor oil and glycerine.—Carl Kulas and Curt Pauling, both of Leipzig, Germany. Canadian patent No. 219,980.

INSULATING COMPOSITION. An insulating sheath comprising rubber and silica whose specific inductive capacity is not greater than 3.7.—The International Western Electric Co., Inc., New York, N. Y., assignee of Robert R. Williams, Roselle, New Jersey. Canadian patent No. 220,093.

The United Kingdom

PRESERVING RUBBER LATEX. A preservative for latex consisting of alkalized phenol formed into solid blocks to facilitate transportation, requiring only to be dissolved in water before adding to the latex.—F. G. McGuire, Bangor; A. A. Agar, Ardmore; and H. T. Coulter, Belfast; all in Ireland. British patent No. 178,337.

GOLF BALL COVERS. A mixture of approximately 90 per cent balata, 2.8 per cent rubber, 2.8 per cent sulphur, 2.8 per cent zinc oxide, and 1.5 per cent zinc amyl xanthate is formed into hemispherical cups pressed on to a golf ball center and held between the platens of a hot-plate press long enough to soften. Pressure is then applied long enough to start vulcanization without injury to the center, when the ball is removed and air-cured, the zinc amyl xanthate acting as an accelerator.—The B. F. Goodrich Co., 1780 Broadway, New York, assignee of W. C. Geer, 630 Diagonal Road, Akron, Ohio—both in U. S. A. British patent No. 178,796. (Not yet accepted).

PIGMENTS OR FILLERS. A material suitable as a pigment or filler for rubber, etc., consisting of precipitated magnesium hydrate and calcium carbonate prepared by treating a mixture of magnesia and lime with an alkali carbonate in an aqueous medium.—H. R. Rafsky, Lawrence, Massachusetts, British patent No. 178,896.

BANDOENG (JAVA) TO HOLD THIRD ANNUAL FAIR

A third annual fair, to represent the industries of the Dutch East Indies, and subsidized by the Netherland Indian Government, will be held at Bandoeng, Java, from September 18 to October 8, 1922. Full information can be secured through the offices of the Netherland Indian Government, 44 Beaver street, New York, N. Y.

Recently Published Articles Relating to Rubber

The New Vulcanization and Accelerators[1]

By André Dubosc

CONTINUING the theories of vulcanization there is discussion of the assumption of Harries of metastable and stable rubber, the thiozonide theory of Erdman, the chemical and physical theories of Potts for cold and hot vulcanization, respectively, and the researches of Stevens. In general the advocates of the physical theories admit the possibility of subsequent chemical combination, whereas those of the chemical theories admit a preliminary adsorption of sulphur.

[1] Le Caoutchouc et la Gutta-Percha, 19, 11,213-6, 1922.

Accelerating Aging Tests on Rubber Goods[1]

By W. W. Evans[2]

This paper illustrates and describes the aging apparatus used in the research laboratories of The B. F. Goodrich Co., and contains several graphs showing the effect of accelerated aging of typical rubber compositions in comparison with natural aging of the same stocks.

[1] Paper presented at the Twenty-fifth Annual meeting of the American Society for Testing Materials, Atlantic City, New Jersey, June 26-30, 1922. Full references to all the earlier work on this subject are contained in a paper presented before the International Rubber Congress at London in June, 1921. This paper was published in THE INDIA RUBBER WORLD, September 1, 1921.

[2] Development Manager, The B. F. Goodrich Co., Akron, Ohio.

The Use of the Microscope in the Rubber Industry[1]

By Herbert Sutcliffe[2]

The utility of the microscope is recommended for examining pale crêpe and smoked sheet plantation rubbers for such defects as included air bubbles, moisture, dirt, rust film, and mold in spotted crêpe. The defect known as "stretching rusty" shows when an apparently perfect sheet is pulled strongly, and is allowed to return to its original shape. The rust originates from the serum which remains on the sheet after the coagulum is taken out of the tank.

When a small piece of the rubber is allowed to swell up in xylol the included water can be seen forming a very fine emulsion with the xylol.

Usually a 16-mm. objective and an x 8 or x 10 eyepiece will give sufficient magnification for most examinations, though in a few cases it may be necessary to use a 4-mm. objective.

[1] Paper read before the Royal Microscopical Society, London, April 19, 1922.

[2] Rubber Growers' Association.

Determination of Sulphur in Organic Compounds and Technical Products[1]

By H. ter Meulen

The organic substance containing sulphur is heated in a stream of hydrogen until completely volatilized or decomposed. The gas is led over heated platinized asbestos, converting all the sulphur into hydrogen sulphide. The latter is absorbed in alkali and estimated volumetrically by means of iodine or colorimetrically with sodium plumbite. Too large a quantity of material should be avoided, and to ensure complete combination of hydrogen and sulphur the heating must not be too rapid and the current of hydrogen must not be passed too quickly. The activity of the catalyst falls off, usually by deposition of carbon, and the latter should be burnt off after each determination.

The method is applicable to vulcanized rubber using ten mg. of the sample with equal amount of borax.

[1] Recueil des Travaux Chimiques de Pays-Bas, 1922, 41, 112-120.

Properties of Dried Rubber Latex[1]

By H. P. Stevens

Examination showed that the high rate of vulcanization of evaporated latex cannot be explained by the presence of an accelerating substance pre-formed in the latex. The rapid vulcanization of evaporated latex also can be due only in a small degree to putrefactive bases.

[1] Bulletin of the Rubber Growers' Association, 1922, 4, 86-89.

TECHNICAL PHOTOGRAPHIC EXHIBIT

An exhibit will be made by The Technical Photographic & Microscopical Society in connection with the Eighth National Exposition of Chemical Industries at Grand Central Palace, New York, N. Y., during the week of September 11 to 16. K. B. Cook, of The United States Rubber Co., is chairman of the Rubber Committee, and has also been made one of the members of the Textile Division, while B. S. Foster, also of the United States Rubber Co., will serve with the last-mentioned committee. Henry Green, of The New Jersey Zinc Co., is one of the members of the Microchemistry Division.

MAGNESITE DEPOSIT FOUND IN SOUTHERN NEVADA

A recently discovered deposit of magnesite of unusual character, which promises to yield a large and readily available supply of this material, has been brought to the attention of the United States Geological Survey. The deposit, forming a chalky-looking bluff, and remarkably free from foreign material, is in Clark County, Nevada, a few miles above the town of St. Thomas, and in the Valley of Muddy river, one of the tributaries of Virgin river. The best part of the deposit consists of beds aggregating, it is said, at least 200 feet in thickness.

LICENSE AND SALE OF DIPHENYLGUANIDINE

The Dovan Chemical Corporation announces that it has licensed Perth Amboy Chemical Works to sell diphenylguanidine to the rubber trade under the Weiss patent No. 1,411,231. The diphenylguanidine so manufactured will be sold by its exclusive selling agent, The Roessler & Hasslacher Chemical Co., 709 Sixth avenue, New York, N. Y. The Dovan Chemical Corporation will continue the manufacture and sale of diphenylguanidine and its product will be sold by its exclusive selling agent, States Metals Co., 30 Church street, New York, N. Y.

The Dovan Chemical Corporation also announces that it has been licensed to sell diphenylguanidine to the rubber trade under United States patent No. 1,149,580 issued to Hofmann & Gottlob, and assigned to the Grasselli Chemical Co.

FITTING RUBBER MALLETS WITH HANDLES

A rubber mallet is an indispensable tool for the mechanic who must hammer metal parts that must not be scratched or battered. To prevent the head coming off the handle, a common difficulty, make the handle largest at the head end, and then slip the handle through the rubber head.

Annual Convention American Society for Testing Materials

New Officers and Sub-Committees—Reports of Committees

THE annual meeting of the American Society for Testing Materials was held June 26-30, at Atlantic City, New Jersey. The new officers elected were as follows:

New Officers and Committees

Chairman, A. E. Jury, United States Rubber Co., New York; first vice-chairman, Kenneth Moller, Lockwood, Greene & Co., Boston; second vice-chairman, E. D. Walen, Cotton Research Co., Boston; secretary, Russell T. Fisher, National Association of Cotton Manufacturers, Boston.

The new members of Committee D-13 are: S. E. Jackson, Crown Manufacturing Co.; H. S. Busby, Cheney Bros.; O. G. Murphy, Shawmut Mills; O. Butler, Connecticut Mills; R. T. Fisher, National Association of Cotton Manufacturers; E. S. Brewer, Wellington, Sears & Co.; H. P. Gurney, Boston Belting Co.; and W. L. Ball, Mt. Vernon-Woodberry Mills.

Hose and Belting Ducks

Sub-Committee 9 on Hose, Belting and Numbered Ducks was appointed to reconsider standard tests for these materials. The personnel follows: A. M. Tenney, Wellington, Sears & Co., chairman; E. S. Brewer, Wellington, Sears & Co.; Roy Dallas, Elm City Cotton Mills; W. L. Ball, Mt. Vernon-Woodberry Mills; C. S. Cook, Lawrence & Co.; G. W. Skirm, United & Globe Rubber Manufacturing Co.; F. W. Daniel, Quaker City Rubber Co.; H. P. Gurney, Boston Belting Co.; K. B. Cook, United States Rubber Co.; H. L. Scott, H. L. Scott & Co.; F. R. MacGowan, Bureau of Standards; and R. T. Fisher, National Association of Cotton Manufacturers.

Committee D-13 Sub-Committees

The following plan of sub-committees was decided upon by Committee D-13:

SUB-COMMITTEE ON HUMIDITY. To continue work on the establishment of a law for the strength of materials based on their moisture content.

SUB-COMMITTEE ON FABRIC TEST METHODS. To continue consideration of present standard methods with a view to submitting suggested revisions if necessary.

SUB-COMMITTEE ON TESTING MACHINES. To consider abrasion tests and rating of fabrics on basis of their resistance to abrasion; also the development of the new Brighton crimp tester which was shown at the meeting by W. O. Jelleme.

SUB-COMMITTEE ON CLASSIFICATION AND IDENTIFICATION OF FIBERS AND FABRICS. To submit suggestions for measurement of the cotton fibers; and to work on development of fiber selection.

SUB-COMMITTEE ON NOMENCLATURE AND DEFINITION. To continue its present work and to cooperate with the Bureau of Standards.

SUB-COMMITTEE ON IMPERFECTIONS AND TOLERANCES. To develop specifications for imperfections and tolerances for cord, breaker, chafing and bicycle fabrics.

SUB-COMMITTEE ON YARNS, THREAD AND TWINE. To develop standard test methods, also specifications for imperfections and tolerances for these materials.

SUB-COMMITTEE ON PUBLICITY. To follow along same lines as previously; to encourage use of A. S. T. M. standards and to develop cooperation with other organizations.

Committee D-11

Committee D-11 on Rubber Products reported recommendations on Standard Methods of Testing Cotton Rubber-Lined Hose[1] and tentative specifications for the following:

INSULATED WIRE AND CABLE: 30 Per Cent Hevea Rubber (D 27-21 T)[2];

COTTON RUBBER-LINED FIRE HOSE FOR PUBLIC FIRE DEPARTMENT USE (D 26-21 T)[2];

WRAPPED AIR HOSE FOR USE WITH PNEUMATIC TOOLS (D 46-21 T)[2];

BRAIDED AIR HOSE FOR USE WITH PNEUMATIC TOOLS (D 60-21 T)[2];

STEAM HOSE (D 54-21 T)[2];

RUBBER BELTING FOR POWER TRANSMISSION (D 53-21 T)[2].

COTTON RUBBER-LINED FIRE HOSE FOR PRIVATE FIRE DEPARTMENT USE (D 14-21 T)[3] now limited to 2½-inch, single-jacketed hose will be expanded to include additional sizes. The specifications will still be in exact accordance with the specifications of the National Board of Fire Underwriters.

COMMERCIAL ADHESIVE TAPE FOR ELECTRICAL PURPOSES (D 69-21 T)[4].

RUBBER INSULATING TAPE (D 119-21 T).[5]

RUBBER GLOVES FOR ELECTRICAL WORKERS ON APPARATUS OR CIRCUITS NOT EXCEEDING 3,000 VOLTS TO GROUND (D 120-21 T).[6]

Proposed tentative specifications were offered for rubber pump valves, and for methods of testing rubber products.

Among the miscellaneous matters referred to in the report were the following:

HARD RUBBER CONTAINERS FOR STORAGE BATTERIES, RUBBER GLOVES; ELECTRICAL SWITCHBOARD MATTING; BELTING.

The Joint Rubber Insulating Committee went out of existence July 15, 1921, and its work has been taken over by the Executive Committee of the A. S. T. M. A sub-committee on chemical analysis was organized and its membership includes many former members of the Joint Rubber Insulation Committee.

Committee Reports

Committee D-13 on Textile Materials reported proposed revised tentative specifications for Imperfections and Tolerances for 60-inch, 17½-ounce Square Woven Fabric, D 122-22 T; and Methods for Testing Cotton Fibers, D — -22 T. This report was unanimously adopted.

Committee D-8 on Waterproofing Materials (D 8) included in its report a Method of Sampling Bituminous Materials Shipped in Barrels or Drums, D — -22 T.

Committee D-9 on Electrical Insulating Materials covered the following topics: varnishes, molded materials, sheet or laminated insulation, liquid insulation, porcelain, and cable splicing and pothead compounds. An appendix to the report consists of a paper on Numerical Tabulation and Comparison of Varnish Tests by John A. Findley.

The Committee on Nomenclature and Definitions has appointed an Editorial Committee on Definitions to consider terms relating to textiles (D 76, D 122, D 123).

Committee D-10 on Shipping Containers reported proposed ten-

[1] 1921 Book of A. S. T. M. Standards.
[2] Proceedings, A. S. T. M., Vol. 21, 1921.
[3] Proceedings A. S. T. M., Vol. 21, p. 773, 1921.
[4] Proceedings A. S. T. M., Vol. 21, p. 799, 1921.
[5] Proceedings, A. S. T. M., Vol. 21, p. 802, 1921.
[6] Proceedings, A. S. T. M., Vol. 21, p. 805, 1921.

tative general specifications for Wooden Boxes, Nailed and Lock-Corner Construction.

Standards adopted were: Specifications for Rubber Belting for Power Transmission; Steam Hose; Leader Hose for Use with Pneumatic Tools; Viscosity of Lubricants; Tests for Loss on Heating of Oil and Asphaltic Compounds; Determination of Softening Point of Tar Products; General Methods for Testing Cotton Fabrics.

Some Characteristics of Lampblack[1]

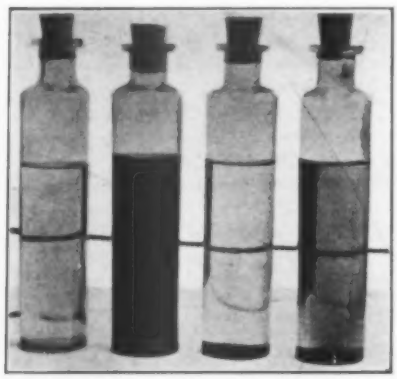
By Samuel Cabot

Lampblack is probably the oldest of all pigment colors in general use. In rubber compounding it was found to possess so many of the necessary qualities that its use has been practically universal from the first.

Physical Qualities of Lampblack

FINENESS. Lampblack is one of the finest pigments known and if properly handled will become so fine that it is invisible except to an ultra-microscope. When black is in suspension in this condition, it is known as a colloidal solution and will not settle.

WORKABLENESS. Lampblack disburses rapidly through a medium such as rubber or linseed oil which makes it work into a product very easily. Most pigments tend to gather and remain in lumps during mixing.



Comparative Test of Lampblack

These points are effectively shown in the illustration. The first and third bottles contain, respectively, zinc oxide and iron oxide; the second is lampblack, and the fourth, carbon black. The zinc and iron oxide both settled immediately and completely leaving the oil perfectly transparent, the carbon black is settling rapidly and is almost transparent, while the lampblack has settled very little and is entirely opaque.

The tests in the second and third bottles show why lampblack ground in linseed oil always remains in suspension.

COLORING POWER. Compared with red, yellow, white, and pigments of any other color, lampblack has much greater coloring effect as shown by the following table.

	Unit Coloring Power	Color Cost
Zinc oxide	7	1300
China clay	0	0000
Red oxide of iron	40	650
Lampblack	1000	15
Barytes	0	0000

It will be seen that lampblack is not only the strongest color but it is by far the most economical color to use.

TONE. The tone of lampblack is a bluish black and when mixed with white gives a characteristic blue-gray which it is impossible to duplicate with any other pigment. Other black pigments, such as carbon black, etc., have brown undertones.

LIGHTNESS. The specific gravity of lampblack is 1.78. This is lighter by far than that of the metallic oxide pigments.

ABSORPTION VALUE. The comparative bulking power of certain pigments is given in the table below, showing that it is necessary to add much less lampblack, as a filler, to rubber or linseed oil than any other known material. The table also shows that lampblack is not only the most efficient filler but is one of the most economical as well.

	Absorbing Power on Linseed Oil	Absorbing Weight Cost
Zinc oxide	26	665
China clay	25	75
Lampblack	72	336
Barytes	8	92

CONSISTENCY. As a filler lampblack gives flexibility to rubber and also adds a smooth plasticity which facilitates mixing and warming the stock.

WATERPROOF QUALITY. It has a strong affinity for hydrocarbons and oily substances, which makes it readily disburse into rubber and linseed oil. Its remarkable repellent action on water imparts a waterproofness to the product.

INERTNESS. Lampblack is absolutely inert, being unaffected by acids and alkalies. This inertness is found only in carbon pigments which impart this quality to rubber or linseed oil by not being oxygen carriers. Lampblack tends to prevent oxidation which is stimulated by many pigments such as iron oxide, zinc oxide, litharge and all lead pigments. Lampblack will not combine with organic acids or oxidized rubber or linseed oil as will many pigments such as those mentioned.

DURABILITY. Due to inertness lampblack cannot fade or change color. It resists the actinic rays of the sun and prevents them from disintegrating and cracking the rubber or linseed oil.

[1]These notes on the characteristics of lampblack are offered by the research laboratory of Samuel Cabot, Inc., Boston, Massachusetts, as a matter of information and assistance to manufacturers and rubber chemists in the development of their compounds.

RUBBER SECTION PROGRAM AT NATIONAL SAFETY COUNCIL

As announced in the July issue of THE INDIA RUBBER WORLD, the Annual Conference of the National Safety Council will be held August 28-31 at Detroit, Michigan. Following the reports of various committees, the speakers on August 29, at the first session of the Rubber Section, will include A. L. Rose, service director, Kelly-Springfield Tire Co., Cumberland, Maryland, who will discuss "Trials and Compensations of the Safety Man." The second address, on the general subject of "Vulcanizers," will be given by G. W. Cook, supervising inspector, Travelers' Insurance Co., Worcester, Massachusetts. A general round table discussion will be led by H. F. Keating, United States Rubber Co., Morgan & Wright Plant, Detroit, Michigan.

The continuation of the program on the next day includes reports of committees and the following addresses: "Aims and Ideals of the Plant Physician," by Dr. W. S. Ash, United States Rubber Co., Morgan & Wright Plant, Detroit, Michigan; "Management and Safety," by Myron H. Clark, general factory manager, Footwear and Miscellaneous Factories, United States Rubber Co., New York, N. Y., and "Production with Safety," by M. A. Marquette, production superintendent, The Fisk Rubber Co., Chicopee Falls, Massachusetts. At both sessions there will be abundant opportunities for discussion of the various subjects mentioned.

On the same day, and as a part of the Chemical Section program, there will be an address by Charles F. Horan, of the Hood Rubber Co., Watertown, Massachusetts, who will speak concerning "Benzol Poisoning, Its Occurrences and Prevention." At this session the subject of industrial poisons will be the main feature.

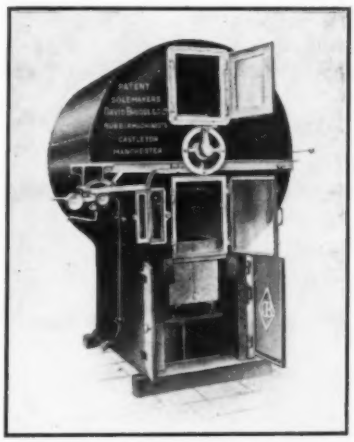
AMERICAN CHEMICAL SOCIETY MEETING

The fall meeting of the American Chemical Society will be held in Pittsburgh, Pennsylvania, with the Pittsburgh Section, September 4 to 9, 1922, inclusive. All divisions and five sections are planning extensive meetings. An attendence of 2,000 members is hoped for. The divisional and sectional meetings will be held on the 6th and 7th. The Rubber Division is planning for the largest meeting in its history.

New Machines and Appliances

Dipping Machine Hydraulically Operated

THE type of machine here illustrated is designed for the manufacture of dipped goods and is usually supplied in batteries of three or six machines. The machine comprises a sheet steel casing with a rotating center shaft carrying four plates, each arranged to receive wood boards to hold the glass or porcelain forms on which the dipped goods such as gloves, nipples, etc., are to be produced. The machine is driven by a small motor and the hydraulic cylinder is connected to a small pump and accumulator. The casing is steam heated and provided with fan arrangement for quickly drying the dipped forms and removing the vapor. Glass doors are provided for observing the work in progress without opening the machine.



Bridge's Dipping Machine

The solution is contained in a tank arranged on runners fitted to the top of a special table mounted on the ram of a hydraulic cylinder. A special valve mechanism can be set to lift the tank to predetermined heights to give the correct depth of dip at each revolution. The operation consists in raising and lowering the tank to dip the forms successively as they are rotated.—David Bridge & Co., Ltd., Castleton, Manchester, England.

Automatic Control for Tubing Machine Belt Conveyors

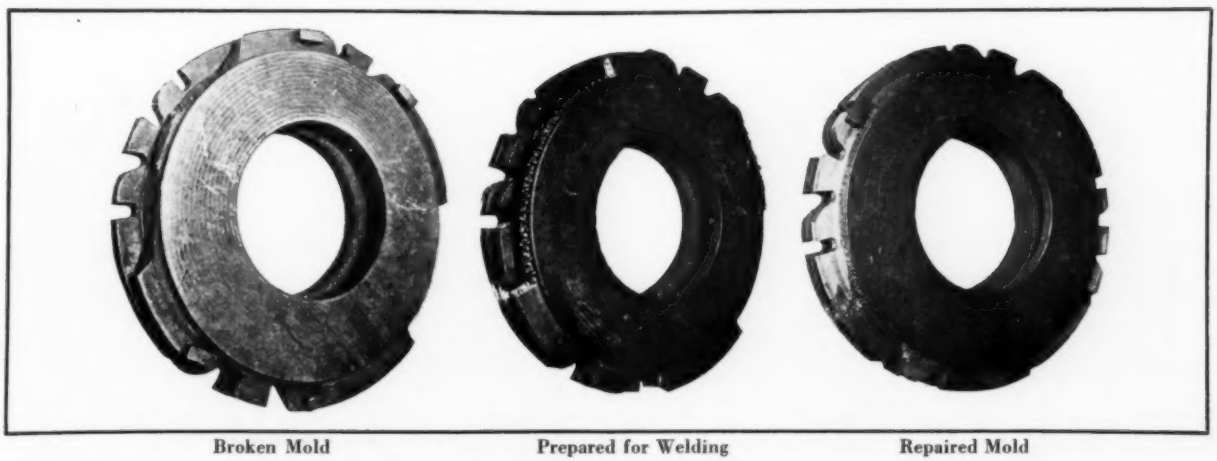
A novel device for the accurate control of belt conveyors used in conjunction with tubing machines is here illustrated. The principal parts are a stand, which contains the operating mechanism and control and supports one end of the conveyor belt, and a small arm bearing lightly on the material as it comes from the tubing machine, which controls the movement of the belt by a mechanism contained in the stand. This mechanism consists of a motor with electrically operated clutches which retard or accelerate the speed at which the apron belt travels, synchronizing the speed of the conveyor with the delivery speed of the tubing machine. This prevents undue tension or stretch of the uncured material and enables the operator to devote his entire attention to gaging and cutting the material to proper length. This control is more positive than ordinary friction drive and needs no adjustment when changing from one size of tubing to another. As there are twin conveying belts, immediately upon cutting the material a new length may be started on the other belt without loss of time or material. Less labor and more accurate product are thus insured.—Farrel Foundry & Machine Co., Ansonia, Connecticut.

Speed Regulator for Tubing Machine Belt Conveyors

Tire Molds Repaired by Arc Welding

Broken cast-iron tire molds can be effectively and economically repaired by arc welding and their usefulness be indefinitely prolonged by the process.

The first step in the repair consists in thoroughly cleaning the broken surface and drilling it with a series of holes on approximately 2-inch centers. The holes are tapped for ½-inch bolts which are inserted and cut off about ¼ inch above the iron surface.



Broken Mold Prepared for Welding Repaired Mold

Cast Iron Tire Mold Repaired by Arc Welding

The next step is to fit a steel piece shaped to take the place of the missing lugs. This piece is beveled off on the inner edge so that the welding operation can be carried on along this beveled edge and the surface of the cast iron containing the studs.

The economy of the repair is shown by the facts that the expense totaled $69.35 cents and the mold continued in service indefinitely after making 170 heats.—Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.

Golf Ball Winding Machine

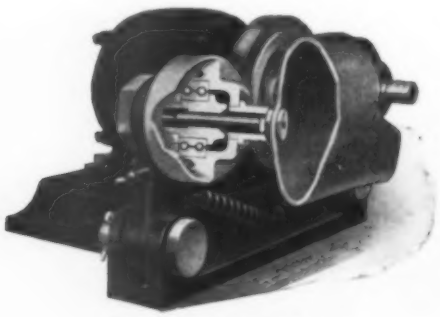
A very practical little machine used by leading makers of golf balls in England and America for winding golf ball centers with rubber thread is pictured in the accompanying illustration.

English Golf Ball Winder

The mechanism for holding and rotating the ball center comprises a set of three rollers. Two of these are supported on horizontal shafts extending across the frame of the machine and receiving power through gear connections from a belt drive. One of these horizontal rollers is cylindrical and one is slightly conical; each has a cam-cut groove to give reciprocal endwise movement. The third roller is concave and located in the forked end of a slotted vertical shaft and bears upon the revolving ball center with a pressure regulated by adjustable top weights. The concave roller is raised by a hand-lever for placing and removing the ball.—The Ajax Engineering Co., Birmingham, England.

Tire Valve Nut Tightener

The application and tightening of the nuts used on tire valves is greatly facilitated by the machine here shown. It not only runs the nut up to the bottom of the stem but tightens it securely



The Moomy Nut Tightener

because the nut is held in a stationary sleeve. This machine will run up and tighten 500 nuts per hour. Two nut tighteners are supplied, one for large and one for small valves, thus enabling the operator to shift from one size to the other without changing the machine.

In operation, the tire valve is inserted in the stationary sleeve which is fluted to correspond with the flat sides of the valve and thus holds the valve stationary. The nut tightener rotates around this sleeve thereby tightening the nut without turning the valve.

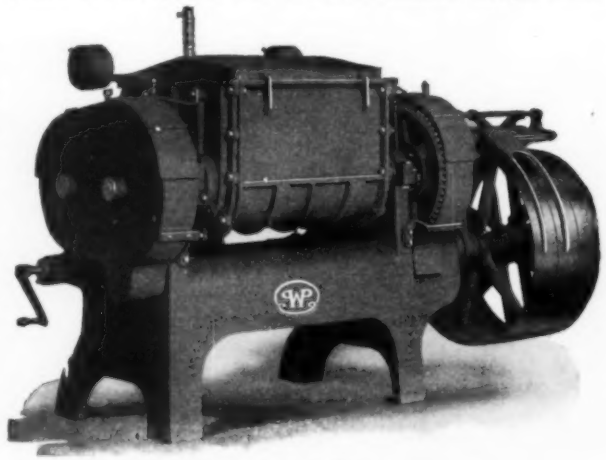
This method does away with the sudden stop when the nut is set and the valve stem is not turned in the tube nor the spreader moved out of line.—Moomy Manufacturing Co., Erie, Pennsylvania.

The "Universal" Masticator

While it has long been known to the rubber trade that the "Universal" kneading and mixing machine has been most useful in rubber compounding, it is not generally known that it is of practical value in the condensation product industry.

After thorough investigation of the manufacturing requirements, the machine here shown was developed and has proved to be particularly adaptable to this class of mixing. Through the action of specially constructed revolving blades the material is thoroughly mixed and evenly distributed throughout the entire batch.

This machine is built in various sizes with or without a steam jacket, and is equipped with a counter-balanced, airtight cover



The W. & P. Mixer

to prevent the escape of dust.—Joseph Baker Sons & Perkins Co., Inc., 25 West 43rd street, New York, N. Y.

Tire and Rim Measuring Device

A new device of English design for accurately measuring the inner circumference of tires, rims or solid tire bases, is here

Barr & Stroud Measurer for Tires and Rims

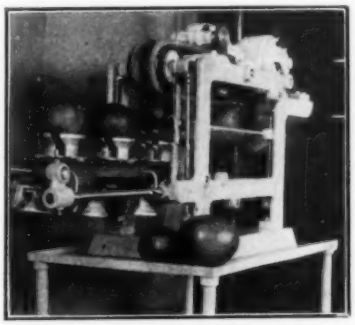
shown. It consists of a weight upon which is pivoted a horizontal arm carrying at its end two graduated dials geared together.

The horizontal arm is provided at its center with an elbow joint, dividing the arm into an inner portion pivoted to the weight, and an outer portion carrying the graduated dials. A spiral spring in the elbow joint tends to keep the outer portion of the arm extended thus pressing the dials against the rim of the tire when in use.

To measure a tire, the cast-iron weight is placed approximately in the center and the arm is rotated in a clockwise direction, the larger dial being pressed by the spring against the inner surface of the tire. The reading of the dials, after passing completely round the tire, gives the internal circumference in millimeters. The instrument can be used for testing the tire band for parallelism by taking a reading, reversing the tire and taking a second reading. If there is a difference between these readings, the band is conical.—Barr & Stroud, Ltd., Anniesland, Glasgow, Scotland.

Machine for Printing Play Balls

The special printing machine here pictured was designed for printing on the surfaces of citrus fruits, melons, nuts, eggs, etc. It has proved of equal value for marking baseballs, tennis balls, etc.



Ball Printing Machine

The balls to be marked are supported in cups carried by an endless belt and pass beneath a revolving belt of soft rubber. This bears the printing plates that are inked by a mechanism at the top of the machine. As the ball comes into contact with a printing plate, an actuating device revolves it against the plate under pressure. After being printed, the ball is lifted from the cup by an automatic projector and sent down a chute for packing.—Fred J. Sevigne, Milford, New Hampshire.

Electric Vulcanizer

The illustration shows a convenient electrically-heated press vulcanizer designed for factory work in the manufacture of rubber stamps or other light press work, or as laboratory equipment for test samples which require vulcanization under close electrical control.

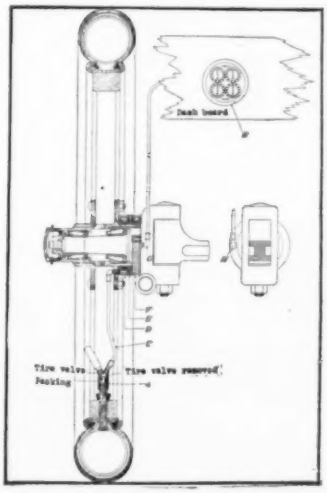
Electric Stamp Vulcanizer

It requires about 25 minutes to raise the heat to 280 to 300 degrees F. The current is automatically turned on and off and just enough current is used to maintain the heat at correct operating temperature, which is secured by simply turning a screw. The heating units cover the entire surface of each platen, insuring perfect distribution of heat. They are protected by the automatic control from burning out and are easily replaced at small expense if they fail because of defect. Mineral wool insulation confines all the heat to the vulcanizing surfaces.—Automatic Electric Heater Co., Warren, Pennsylvania.

Indicating Tire Pressure Gage

This novel device registers the air pressure in an auto tire when the automobile is in motion or at rest.

It transmits the pressure without leakage, and does not interfere with changing a tire or a wheel with a tire.



Tire Pressure Indicator

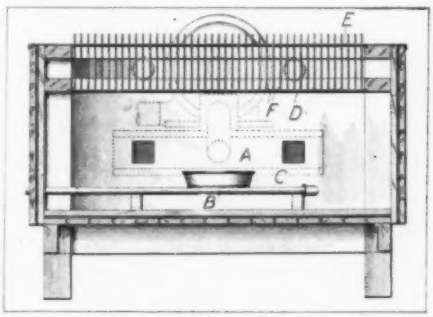
Referring to the illustration, a special dust cap *A* allows air to be blown into the tire and immediately shows the operator of the car when he has the correct load. The indicator *B* on the instrument board of the car is operated by air pressure passing through tube *C* connected to a flexible accordion-shaped member *D* which is rigidly attached to the wheel hub. This device flexes, depending upon the quantity of air in the tire, and returns to normal when the air is let out. This pressure is transmitted through a thrust ball bearing *E* to another bellows-shaped member *F* similar to *D* which is fastened to the front axle pivot as shown at *G* and *H*, or to the rear housing. This member *F* remains stationary. The bearing *E* breaks the rotary motion and transmits the pressure from the bellows *D* to the bellows *F*. As the bellows *F* is compressed it operates the gage *B* which shows four dials representing the four wheels of the automobile in their relative positions.—William Roberts, Consulting Engineer, Springfield, Massachusetts.

Machinery Patents

Vulcanizing Transparent Nipples

The object of this invention is to insure that all portions of dipped rubber nipples shall be properly cured, and the tendency of tacky inside surfaces avoided.

The apparatus consists of an airtight box *A* provided with a heating coil *B* for vaporizing the sulphur chloride placed in a pan *C*. The top of the box is covered with two sheet aluminum plates *D* and *E*. Pins *F* are fastened to plate *D* and project upward through holes in plate *E*. Upon these pins the nipples are placed, the ring of each nipple resting in a circular groove around the hole through which its supporting pin passes.

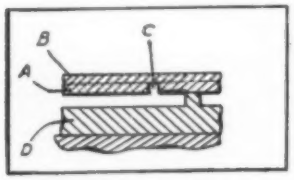


Vulcanizer for Nipples

Thus the nipple ring is protected from a second cure and the curing vapor finds its way to the interior of the nipple, aided by a fan circulating system.—Roy Sanderson, Kenmore, Ohio. United States patent No. 1,420,287.

Mold for Making Rubber Soles

The illustration is a cross-section of one edge of a mold for making rubber soles for turn shoes.



Rubber Sole Mold

It consists of two steel plates *A* and *B*, the former *A* having a rib-forming slot *C* extending entirely through it and the latter *B* being welded to the slotted plate and seamlessly closing the slot to convert it into a groove. To complete the mold, plate *D* is provided with a rib extending around the sole shape uniformly distant from the groove *C* and determining the thickness of the sole formed in the mold.

For machining the sole patterns in sheet steel, special tools are provided which cut the sole shapes and slots for receiving the stitches when applying the soles to uppers.—R. F. Knight, Beverly, Massachusetts, assignor to United Shoe Machinery Corporation, Paterson, New Jersey. United States patent No. 1,419,972.

Other Machinery Patents

The United States

1,418,535 Tube making machine. H. Z. Cobb, assignor to New York Belting & Packing Co.—both of New York, N. Y.
1,418,604 Machine for cutting soles. E. L. Patten, Malden, Mass., assignor to Wellman Co., a Maine corporation.
1,418,635 Mold opening device. W. Finn, assignor to Morgan & Wright—both of Detroit, Mich.
1,418,639 Apparatus for making cushion tires. J. R. Gammeter, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.
1,418,641 Mixing machine. R. H. Gerard, assignor to Morgan & Wright—both of Detroit, Mich.
1,418,642 Mixing machine. R. H. Gerard, assignor to Morgan & Wright—both of Detroit, Mich.
1,418,653 Shaffer-strip-guide device. A. D. Kilgore, Akron, O.
1,418,662 Tire shaping machine. H. V. Lough, assignor to The Hartford Rubber Works Co.—both of Hartford, Conn.
1,418,753 Device for removing tires from molds. R. N. Van Buskirk, assignor to Morgan & Wright—both of Detroit, Mich.
1,418,906 Machine for and method of making cord tire stock. J. B. Brennan, Lexington, Mass.
1,419,049 Tension device. W. B. Harsel and R. B. Day, assignors to The Goodyear Tire & Rubber Co.—all of Akron, O.
1,419,064 Tire making machine. C. L. Landon, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.
1,419,144 Machine for cutting slab packing. W. J. Kent, Brooklyn, N. Y., assignor to The Mechanical Rubber Co., a New Jersey corporation.
1,419,577 Tire mold. M. A. Marquette, assignor to The Fisk Rubber Co.—both of Chicopee Falls, Mass.
1,419,752 Inner tube stripping post. W. B. Perrine, Trenton, N. J.
1,419,907 Manufacture of pneumatic tire casings. J. V. Worthington, Axminster, assignor to The Dunlop Rubber Co., Limited, Regent's Park, London—both in England.
1,420,367 Apparatus for drying the covering of electrical conductors or the like. J. P. Devine, Buffalo, N. Y.
1,420,371 Oven for vulcanizing, baking and other uses. K. L. Emmons, Wilmington, Del.
1,420,488 Expansible core. H. P. Koenneke and W. F. Miller; said Koenneke assignor of his entire right to G. E. Keller—all of Dayton, O.
1,420,490 Expansible core for curing automobile tires and the like. W. F. Miller, Dayton, O.
1,420,623 Tire casing mold. F. B. Converse, assignor to The Norwalk Tire & Rubber Co.—both of Norwalk, Conn.
1,420,727 Apparatus and method of making endless belts or rings. A. E. Moon, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.
1,420,744 Driving and stopping mechanism for a grommet-winding machine. R. C. Pierce, Akron, O., assignor to The B. F. Goodrich Co., New York, N. Y.
1,420,803 Mold for heavy truck tire flaps. A. O. Abbott, Jr., assignor to Morgan & Wright—both of Detroit, Mich.
1,420,930 Tire ply turn-up device. A. D. Kilgore, Akron, O.
1,420,959 Machine for treating rubber or other plastic material. D. R. Bowen and C. F. Schnuck, assignor to Farrel Foundry & Machine Co.—all of Ansonia, Conn.
1,421,081 Loom for weaving cord tire fabrics. F. C. Hall, assignor to Jenckes Spinning Co.—both of Pawtucket, R. I.

The Dominion of Canada

219,399 Apparatus for making inner tubes. The Canadian Consolidated Rubber Co., Limited, Montreal, Quebec, assignee of D. C. McRoberts, Indianapolis, Ind., U. S. A.
219,463 Self registering pressure gage. A. Schrader's Son, Inc., New York, N. Y., assignee of J. A. Bowden, Los Angeles, Calif.—both in the U. S. A.
219,630 Machine for making solid rubber tires. The Dunlop Rubber Co., Limited, London, assignee of C. Macbeth and H. Willshaw, both of Birmingham, Warwick—both in England.
219,780 Tire removing machine. The Weaver Manufacturing Co., Springfield, assignee of J. B. Smith, Havana—both in Ill., U. S. A.
219,948 Vulcanizing mold for boots and shoes. D. F. Wilhelmi, Doorwerth, The Netherlands.
219,953 Method of nullifying longitudinal irregularities. The Cameron Machine Co., New York, N. Y., assignee of R. M. Johnstone, Roselle Park, N. J.—both in the U. S. A.
219,954 Winding mechanism. The Cameron Machine Co., New York, N. Y., assignee of R. M. Johnstone, Roselle Park, N. J.—both in the U. S. A.
220,001 Collapsible core. V. L. Cox, Mount Stirling, Ohio, U. S. A.
220,052 Bead pressing and guide rolls for tire wrapping machines. P. Pierce, Chicago, Ill., U. S. A.
220,084 Machine for trimming rubber heels. The Firestone Tire & Rubber Co., assignee of E. D. Putt and W. C. Stevens—all of Akron, Ohio, U. S. A.
220,115 Tire casing spreader. The Weaver Manufacturing Co., assignee of I. A. Weaver and R. C. Stoehr—all of Springfield, Ill., U. S. A.
220,151 Footwear size stamping die. D. A. Massir, Granby, Quebec.
220,167 Molding press. The Cutler Hammer Manufacturing Co., assignee of F. E. Layman—both of Milwaukee, Wis., U. S. A.

The United Kingdom

177,825 Machines for making grommets. W. N. Lurcott, 22 Duer Place, Weehawken, New Jersey, U. S. A.
178,205 Metal mold for tire repairing. W. Frost and H. Frost & Co., Limited, 148 Great Portland street, London.
178,358 Rubber trimming machine. A. R. Christian and Rubber Trimming Machine Co., Limited, Brimscombe, Gloucestershire.
178,915 Press vulcanizer. Dunlop Rubber Co., Limited, 1 Albany street, Regent's Park, London, and J. Mitton, Manor Mills, Salford street, Aston Cross, Birmingham.
179,312 Tire building machine. Dunlop Rubber Co., Limited, 1 Albany street, Regent's Park, London, and C. Macbeth, Fort Dunlop, Erdington, Birmingham.
179,379 Repair vulcanizer. G. L. Pauer, 17 Theresienstrasse, Vienna.

New Zealand

47,620 Inner tube deflator. R. Edwards, Herschell street, Napier, N. Z.

Germany

Design Patents Issued, with Dates of Issue

816,501 (September 22, 1920). Apparatus for vulcanizing automobile tires. Kuhlen & Laudien, Essen.
816,543 (May 1, 1922). Device for vulcanizing rubber dental plates. Julius Wohlfeil, Neue Konigstrasse 40, Berlin.
816,571 (June 20, 1921). Mechanism for forming casings for air chambers, and the like. The Dunlop Rubber Co., Limited, London; represented by Dr. R. Wirth, C. Weihe, Dr. H. Weil, M. M. Wirth, of Frankfort-on-the-Main, and T. R. Koehnhorn and E. Noll, Berlin, S. W. 11.

Process Patents

The United States

1,419,879 Method of making tires. M. A. Marquette, assignor to The Fisk Rubber Co.—both of Chicopee Falls, Mass. (Original application divided.)
1,420,306 Painting golf balls. F. A. Cigol and L. D. Villa, Paterson, N. J.
1,420,611 Method of constructing pneumatic tires. F. S. Dickinson, New York, N. Y.
1,420,883 Process of making clutch rings for motor cars. F. C. Stanley, assignor to Raybestos Co.—both of Bridgeport, Conn.

The Dominion of Canada

219,359 Resilient tire. E. J. Taylor, Edmonton, Alberta.
219,360 Resilient tire. E. J. Taylor, Edmonton, Alberta.
219,684 Dental abrasive disk. G. O. Burlaw, Newark, New Jersey, U. S. A.
219,730 Tire filler. M. W. Needham, Waco, Tex., U. S. A.

The United Kingdom

178,371 Armor for tire tread. A. Remar, Box 84, Maynard, Ohio, U. S. A.
178,695 Elastic overshoe. A. L. Mond, 19 Southampton Buildings, Holborn, London; Hood Rubber Co., Watertown, Mass., U. S. A.
178,796 Golf ball covers. B. F. Goodrich Co., 1780 Broadway, New York, N. Y., assignees of W. C. Geer, 630 Diagonal Road, Akron, O.—both in the U. S. A. (Not yet accepted.)
178,811 Making cord fabric. E. Hopkinson, 1790 Broadway, New York, U. S. A. (Not yet accepted.)
178,898 Treads of rubber impregnated fibers. J. Brown, Herald Buildings, Auckland, New Zealand.
178,920 Process for utilizing waste rubber. H. Gare, care Hazel Grove Rubber Co., Limited, Bramhallmoor Lane, and G. Gare, Green Lane, Hazel Grove—both in Stockport, Cheshire.

Cut Sheet from a European Standpoint

Successful Making of Cut Sheet Requires Select Quality of Crude Rubber, Special Machinery and Expert Technical Skill

By John Herrisohn

ALTHOUGH cut sheet has lost something in quality in the last few years it is still made in large quantities and is indispensable to the surgical rubber industry. Calendered sheet of the same quality of rubber has neither the homogeneity nor the beauty of cut sheet which, in making up complicated articles for the care of the sick and wounded, is supreme.

Best Quality Rubber Necessary

The manufacture of cut sheet demands the best qualities of crude rubber and very careful handling. Each quality has to be handled in a different manner.

The compounds for making cut sheet are very simple inasmuch as .they receive no special filling ingredients. Nevertheless, on the proper choice of these component parts depends the production of serviceable, brilliant "preservable" rubber sheets. Rubber high in rosin is absolutely useless because it becomes soft during kneading, becomes brittle when further worked and never keeps. As a rule good cut sheet is made from soft cure Pará. It can also be made from Mollendo Pará, Massai, Mozambique, and similar nervy rubbers that are low in rosin content. Plantation rubber can also be used; however, it must not come from a young plantation, it must be washed absolutely clean, and the smoking must always be even.

Rubber Substitutes and Mixing

Rubber substitute to be suitable for entering into compounds for making sheet rubber must be firm, not too oily, and good to mix with rubber. For black and brown sheets colored spongy substitute is used and must be thoroughly ground into a fine mass before compounding. For red and other bright-colored cut sheet only pure-white rape-oil substitute can be used. Black cut sheet receives no addition of coloring material; the blackish-brown color is obtained by using Pará rubber and blackened rubber substitute. This latter compound becomes darker still when vulcanized. Cinnabar is used for coloring red cut rubber sheet: as a rule a mixture of about 10 kg. is colored with from 400 to 500 g. cinnabar to obtain the well-known "full" red color.

As the different strips of washed rubber are not all of the same color, especially in the case of Pará, due to the fact that the original outer layers are far darker than the inner ones, it is preferable to separate the dark strips from the light ones and put an equal quantity of each in the compounded batch so as to obtain uniform colors.

During the mixing, which is performed on the ordinary mixing mills, care must be taken that the rolls of the mill are not too hot on starting, nor become too hot during the operation. The kneading must be performed as intensively, but as coolly and as rapidly as possible. The crude rubber must be worked in the mixing mill until it is uniformly soft and presents a homogeneous, smooth surface. Then only can the rubber substitute be worked into the crude rubber. The mixture is then rolled into a bolt and allowed to cool.

Masticating the Mix

The second part of the manufacturing process employs the masticator. Several bolts of mixed rubber—from 50 to 100 kg. according to the size of the machine—are placed in a masticator, and at the beginning, the kneading must be slightly warmed so the rubber will immediately warm up on the surface. The bolts of mixed rubber are placed in the hopper of the mill and the rubber is rolled out against the walls of the machine. The rubber block is forced into an elliptic shape which is constantly modified, thus producing strong rubbing and compressing of the inside of the block which rapidly results in substantial heating and renders the rubber plastic, but if the heating is too great the rubber becomes spongy. If the cooling is not sufficient to arrest the generation of excessive heat, the rubber mass is removed from the mill, cut into two pieces and put to cool.

When the whole block of rubber is perfectly homogeneous, presenting no streaks or strata in its structure, it is removed from the mill, the ends cut off, and, to make it more perfectly round, it is again placed in the masticator for a few moments. As the cutting off of the ends has reduced the size of the mass, the kneading rollers stretch the mass lengthwise, giving it a rounder form better suited for the cylinder press into which the mass is next placed for pressing.

The Cylinder Core-Press

This press-cylinder, from 30 to 40 cm. in interior diameter and about one meter long, is slightly heated before using and its inside is coated slightly with soft soap. The rubber block is placed inside the cylinder on the floor of which is a round "foot-plate" of suitable diameter, provided with a central hole for receiving the core. Then the cylinder together with its contents is placed in a core-press, a cover-plate which fits the foot-plate is placed on top of the rubber mass and by means of a threaded spindle the rubber block is pressed inside the cylinder until it fits snugly and tightly against the walls surrounding it. At this point an iron core is forced about 7 cm. through the central hole of the head and foot-plates to make a hole that will later be used for the cutting spindle.

The Block Press

From the core press the cylinder, together with the rubber mass inside of it, goes to the block press. Here the mass is pressed inside the cylinder until all air, and incidentally all pores, are forced out of it and, after cooling, a perfectly homogeneous rubber mass is obtained. The rubber block remains in the cylinder, under constant pressure, for from three to eight days. The pressure is maintained constant by frequent tightening and the time that elapses during this pressure treatment permits the rubber to recover from the working to which it has been subjected. Therefore, the longer the block remains in the block press, the better it is.

Freezing the Block

When the time comes for it to be removed, it is placed with the cylinder and end hole core in a cooling machine for freezing. The cooling is obtained by vaporizing, at low temperature, water-free fluid ammonia, which for this purpose takes the necessary heat from its surroundings. For this purpose a vaporizing coil is built inside a large container which is filled with 25 per cent salt water. A compression pump sucks the ammonia through this coil, where it is cooled and vaporized and thus removes the heat contained in the water surrounding it before passing into a condensor, where it is again condensed by the simple cooling of ammonia. From the condensor the compressor draws the condensed ammonia back to the vaporizer and this continuous cycle produces the cooling.

The average temperature inside the refrigerator is from 8 to 10 degrees below zero C. When the block of rubber is thoroughly frozen, which requires about 24 hours, it is ready to be placed

in the cutting machine. It is removed from the cold bath and placed in the horizontal core press which is used for removing it from the cylinder. The lathe spindle (cutting spindle) is next forced into the holes made for the purpose by the core press and the block placed in the lathe to have its raw outside shell (rind) removed, together with irregularities of surface left by the teeth of the masticator. In other words, the block is rectified on the lathe.

It is advisable not to cut off the sheet immediately after removing the frozen block from the refrigerator, for the sheets thus obtained are not so fine and beautiful as those that will be obtained after the hard frozen block has been placed a few days in a cool dry room built for that purpose. This cooling room is preferably underground, near the refrigerating plant, and kept cool by pipes from this plant. The dry frozen block of rubber has its natural color, whereas the damp frozen block as it comes from the refrigerator contains water that modifies its appearance. Further, a damp rubber block gives sheets of irregular, uneven thickness because the end that was on the floor of the refrigerator is always frozen harder than the upper part, so that when it thaws out on the cutting lathe small differences develop which interfere with the cutting of very thin sheets.

Cutting the Sheets

When the block of rubber is in the sheet-cutting machine it is advisable to cut the whole of it into sheets of the same thickness. When one cuts different thicknesses of sheet there results through the changing gears a waste of from 4 to 6 kg. at each change of gearing. In cutting sheets in thicknesses Nos. 10 and 14 it is seldom possible to cut up a whole block of from 50 to 60 kg. in one operation because the block weakens too soon and evades the cutting knife.

During the cutting a flow of cold water is maintained at the cutting point and the sheet, as it is spirally separated from the block, is constantly sprinkled with strongly concentrated soap-water while being wound on a wooden roller which revolves on a stand facing the cutting machine. When the roll of sheet is cut, it is unwound from the wooden roller, stretched on a flat table, and well dried by carefully rubbing with soft cloths. The sheet is then again wound into a roll and, after the edges have been equalized on a lathe, it is stored in a cooled "sheet-cellar."

Freshly cut sheet should not be used at once because it is too soft. It should be cooled for at least 2 to 3 weeks and before being used should be slightly warmed, carefully, so that any tension that may occur during operations may equalize itself throughout the piece of sheet.

Marbled and Striped Effects

To produce marble effects, the different-colored mixtures are worked in the mixing mill into sheets of from 6 to 7 mm. in thickness and then these differently colored sheets of colored compounds are wound alternately together and the whole roll turned into the hopper of the masticator. After a short masticating the block is cut in two and the separated parts placed oppositely in the masticator's hopper again so that the colors of the different layers are thoroughly intermingled. In this way a skilled operator can divide the marble effect and make it up exactly to suit his purposes.

To make striped sheets the different colored sheets are cut in proper width and thickness from the blocks of red and black rubber sheet compound, or round disks can be stamped out of the sheet. These strips or the disks are laid alternately as regards color, one on top of the other until a height of 80 cm. is attained. All the strips or disks must be slightly heated beforehand and spread with a thin rubber solution for otherwise the adhering remains of the soap-water would cause them to bind together poorly. Air bubbles between the layers of sheeting must be thoroughly eliminated and a good way to destroy them while superlaying the rubber disks is to puncture them with a needle.

The block thus formed is slightly pressed together and the process of turning it into sheets follows as described for ordinary cut sheet. For making transparent sheet only pure plantation rubber and oily factice can be used. Absolute cleanliness and the elimination of all impurities and dirt, both from machinery and from the workman's clothes, are essential. For this reason all tables, closets, and the like, are covered and lined with tin so that no wooden splinters may find their way into the rubber.

Judicial Decisions

THE I. T. S. RUBBER CO. VS. ESSEX RUBBER CO. United States Circuit Court of Appeals, Docket 1505.

In the suit filed March 14, 1921, concerning alleged infringement of the Tufford heel patent No. 14,049, on appeal by the I. T. S. company the decree of the District Court dismissing the case for want of jurisdiction was reversed and the case remanded to that court for further proceedings.

Treasury Decisions

GOODYEAR TIRE & RUBBER CO. VS. UNITED STATES (No. 2146). United States Court of Customs Appeals, June 6, 1922. Appeal from Board of United States General Appraisers, G. A. 8477 (T. D. 38906).

In the case of the Goodyear Tire & Rubber Co., of Toronto, Canada, which sold automobile tires to The Goodyear Tire & Rubber Co., of Akron, Ohio, the question was raised as to the value of the appraisement. The ruling of the United States Court of Customs was that the decision of the Board of General Appraisers in fixing the dutiable value of the tires at the Canadian price to dealers and service stations had proceeded upon a wrong principle of law, and should therefore be reversed. Appraisement should have been made either at the cost of production or at the wholesale price for which such or similar merchandise was freely offered for sale in the usual wholesale quantities in the open market in the United States.—Treasury Decisions, Vol. 41, No. 24.

Appraiser's Decisions

No. 45049.—Protest 944530 of A. G. Spalding & Bros. (New York).

SOLE AND HEEL ATTACHMENTS. Sole and heel attachments composed of cotton and india rubber with nails or pegs for fastening to shoes, classified as cotton and india rubber wearing apparel at 30 per cent ad valorem under paragraph 256, Tariff Act of 1913, are claimed dutiable as manufactures in chief value of india rubber at 10 per cent under paragraph 368.

Opinion by WELLER, G. A. On the authority of G. A. 8445 (T. D. 38763) the sole and heel attachments in question were held dutiable under paragraph 368 as claimed.

SAMPLES INSTEAD OF CIRCULARS

Not the least of the many advantages which the modern tire vulcanizer enjoys over the pioneer repair man is the large variety of repair materials from which he can choose. Many manufacturers in seeking tire repair business depend wholly upon circulars to describe their merchandise, but certain of the big manufacturers furnish prospective customers with samples of every kind of repair material made by them. Such an assortment is neatly arranged in a holland folder and comprises fifteen to twenty specimens of breaker, rebuilding, bead cover and motorcycle fabric, frictioned and coated on one or both sides, and for cord or fabric truck or passenger car tires, as well as builtup and camel back tread stock, ivory, black, and gray retread gums, cushion and cement gums, and 5-minute and cured-back repair gums. With the samples is a curing scale with vulcanizing information printed on a holland sheet.

New Goods and Specialties

"Correct" Golf Grip Positions Face of Club

A RIBBED rubber grip applied to golf clubs by a special device has a red rubber stripe to show the golfer automatically when the face is correctly placed. This accessory was used by Walter Hagen when he won for America in the recent British Open Golf Championship match, and is being featured by

Rubber Golf Grip

Thos. E. Wilson & Co., sporting goods dealer.—Armstrong Golf Grip Corporation, 1207 American Building, Baltimore, Maryland.

Leather Footwear Styles Adapted to Fabric

The duck and canvas footwear of the summer follows closely the styles of leather sport shoes, even to the trimming. The "Lenox Sport Oxford" shown here has a white duck upper, red or black sport trimming, a white corrugated rubber sole and pneumatic heel, and a Kendex insole. The lacing also is white. It is made on the "Comet" last in C width only and in women's sizes from 1 to 8.—Hood Rubber Products Co., Inc., Watertown, Massachusetts.

Women's "Lenox Sport Oxford"

Culp to Add Junior Cord Tire Line

In order to make its lines of tires more comprehensive, the Culp organization has added what is known as the Culp Junior Cord line. The Culp Junior Cord will be made in accordance with a new development in the organization's specifications and may be had in 32, 33, and 34 by 4-inch sizes, selling for about the price of a high grade fabric tire of the corresponding size.—George K. Culp, Inc., 56 West 45th street, New York.

Culp Junior Cord

"All-Weather" Tread Truck Tire

To the original Goodyear hollow center cushion tire has been added the "All-Weather" tread. Other special features include triple cushioning, the new indented sidewall, and the special pressed-on base. This tire is made in standard sizes from 4 to 7 inches, inclusive, and is specified as all around equipment for light and medium duty trucks and for front wheels of heavier units.—The Goodyear Tire & Rubber Co., Akron, Ohio.

"Hold-Fast" Spray Given "Worthee" Brand Also

When the well known "Hold-Fast" bath spray, of which a recent modification is illustrated, was taken over by the present manufacturer, it was given the additional brand of "Worthee." The metal sprinkler has a red rubber cushion around the edge and the tubing and faucet attachment are also of red rubber. The type illustrated has a red rubber detachable massage brush to apply over the cushioned nickel spray rose, and is adaptable for the bath, massage, and shampoo.—Youngs Rubber Corporation, 79 Walker street, New York, New York.

"Worthee Brand Hold-Fast" Spray

Combination Brassière Girdle

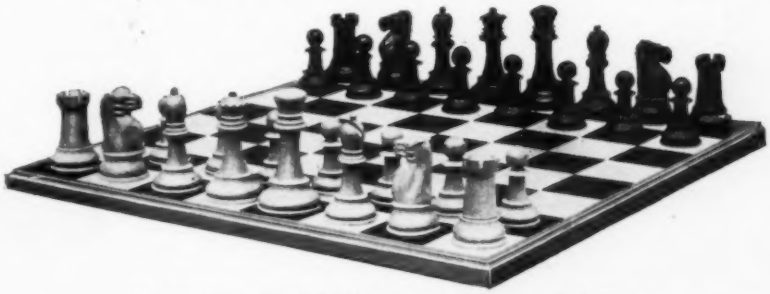
One of the new developments of the elastic girdle expected to prove popular is shown here. The "Combinette" has the girdle portion of fine and sturdy elastic webbing and the brassière top of brocade.

The same company also manufactures under the new name of "Raydio" what was formerly the "Rubbolastic" line of corsets and girdles, made of either all elastic webbing or combined webbing and brocade.—American Lady Corset Co., Inc., Detroit, Michigan.

The "Combinette"

Rubber Chess Set

Dealers and toy shops that feature games will appreciate the rubber chess set in club size. The separate pieces, following the familiar Staunton models, are molded in one piece from soft rubber to imitate ebonite and boxwood. The advantages of this innovation in chess men are: cleanliness; absolute freedom from noise, either when turned from the box or in playing; and the impossibility of the pieces becoming chipped or separated from their bases.—The Avon India Rubber Co., Ltd., 343-345 Euston Road, London, N. W. 1, England.



English Chess Set Molded from Soft Rubber in Club Size

Rubber Belt for Men

The "Longlife" trouser belt is made of durable rubber in black, cordovan, gray, and white, and fastens with a buckle. It is said to be unusually durable, is washable, and does not wear rough. These belts come packed in individual cartons inside a display carton containing a dozen assorted sizes.—The B. F. Goodrich Rubber Co., Akron, Ohio.

"Longlife" Belt

"Tirro Tape" for Mending

A strong, adhesive, light-gray tape, ¼-inch wide, which can be written on or painted, is produced by coating one side of a strip of fabric with viscous rubber. Adhering instantly to rubber goods, leather, etc., it is useful for repairs, wrapping lawn hose, electrical insulations, binding handles, holding bandages, etc.—Bauer & Black, 2500 South Dearborn street, Chicago, Illinois; 104 East 25th street, New York, N. Y.; Toronto, Ontario, Canada.

Crêpe Rubber Tennis Soles

One of the applications of pure plantation crêpe rubber to British products is to the tennis shoe. The "Fortmason" lightweight sports shoe for men and women has a crêpe rubber sole and the uppers of tan or white buckskin, being hand sewed or hand welted.—Fortnum & Mason, Ltd., 181-184 Piccadilly, London, W. 1, England.

"Fortmason" Crêpe Rubber Tennis

Paris Styles

Deauville, the French watering place where the world plays yearly and luxuriously for a brief time, was the setting in which these rubber bathing suits from Paris were photographed. Both are one-piece suits and are made entirely of rubber, the one on the left being rubberized taffeta with wide shoulder straps, laced bodice, and lacings at the sides. The other is made of a combination of plain, heavy, form-fitting rubber and rubberized fabric of contrasting color used where necessary to provide against the strain bound to come to any suit in actual swimming. This model also is laced at the neck and sides, and the side seams are strongly cemented.

© *Underwood & Underwood, N. Y.*

Rubber Bathing Suits, Deauville, France

"Grenadier" and Molded "Aviator" Bathing Caps

Of two new bathing caps, the "Aviator" is a molded model in natural rubber, for diving. The "Grenadier," made in five colors with contrasting binding and ornament, is tam shape, turned down in front, with head band.—The Faultless Rubber Co., Ashland, Ohio.

"Grenadier" "Aviator"

New Cord Tires and a Solid

The Bergougnan "Gold Seal" cord tire is of the reinforced molded type, replacing the former wrapped tread tire made by the same manufacturer. The tread and sidewall are black and present an attractive appearance.—Bergougnan Rubber Corporation, Trenton, New Jersey.

The "Superior" cord tire is cured on air and is an oversize tire. The carcass is extremely flexible and the non-skid tread is thick and durable. Each workman specializes on his phase of cord tire construction, thereby producing a quality product.—Cord Tire Corporation, Chester, West Virginia.

"Gold Seal" Bergougnan Cord

"Superior Cord"

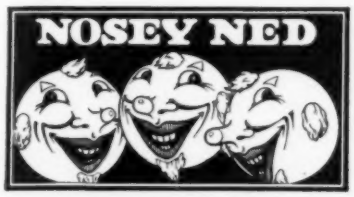
"Carpenter Hi-Crown"

The "Carpenter Hi-Crown" is a solid truck tire, guaranteed for 10,000 miles. It takes its name from the special profile design which, it is claimed, gives a higher rubber cushion, minimizing upkeep.—Carpenter Tire & Rubber Co., Inc., Hempstead, Long Island, New York.

UNVULCANIZED CRÊPE RUBBER SOLES ARE BEING OFFERED MANUfacturers. A prominent Fifth avenue shop is displaying them on sport shoes.

Balloon with "Twistit" Valve

"Nosey Ned," whose red tipped nose extends like a finger in front of his printed face, is decorated with tufts of fur cemented to his forehead, ears, and chin. After inflating, a turn of the

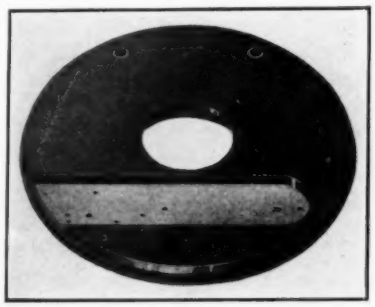


"Nosey Ned" Balloons

"Twistit" valve retains the air and a reverse turn allows its escape. The same concern makes other balloon specialties.—The Oak Rubber Co., Ravenna, Ohio.

Microscope Stage

The instruments employed in scientific research must of necessity embody the utmost in mechanical refinements. In the case of the microscope revolving stage here shown this point is particularly well exemplified in the use of a phenol condensation product in its construction.



Bakelite Microscope Stage

Bakelite is molded into the brass stage because it offers the combined advantages of mechanical accuracy, cleanliness, durability and permanent good appearance. All the necessary apertures, knurling, and metal inserts are molded in the bakelite, thus obviating further machining. General Bakelite Co., 8 West 40th street, New York.

Solid Woven Tire Straps

The Gilmer solid tire strap is woven tightly from tough, long fiber, prestretched cotton yarn, impregnated with a special non-evaporating compound to protect against moisture, grit, oil, etc. The buckle cannot work loose. These straps are packed in cartons containing ten each, as illustrated.—L. H. Gilmer Co., Tacony, Philadelphia, Pa.

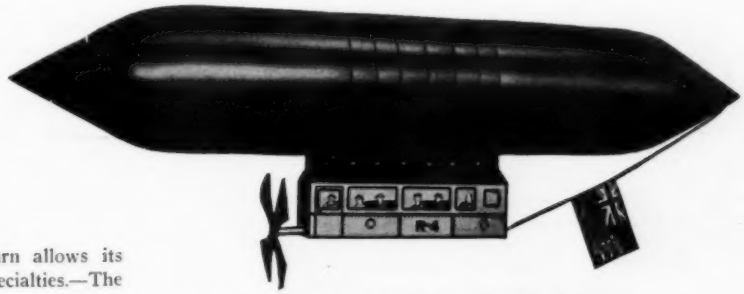
Display Carton—Gilmer Tire Strap

"Tirex"

"Tirex" portable rubber cord for electrical tools and appliances has in its insulation and jacket, respectively, 30 and 60 per cent of Pará rubber, is unaffected by oils or acids, and will not kink.—Simplex Wire & Cable Co., 201 Devonshire street, Boston, Massachusetts.

To Make Real Airship Balloon

A new type of airship balloon combines the familiar sausage style, of red rubber, with printed cardboard cutouts and other construction pieces, including the propeller and American or Canadian flag, to make a real toy airship. Full directions for putting together come with the pieces in a sealed envelope. This should prove a popular item for novelty and toy dealers.—American Toy Air Ship Co., Mansfield, Ohio.



"Great American" Toy Dirigible Balloon

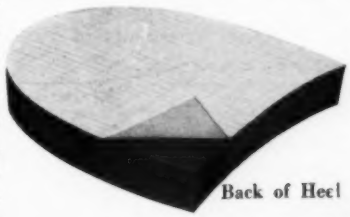
Novelty Squawker Balloon

The popularity of novelty balloons simulating creatures with ears by means of finger-shaped extensions is well catered to by the new squawker balloon shown here, called the "Devil-Head." The "horns" are a part of the balloon itself and the face is printed on. This balloon is produced by dipping special forms similar to those used for rubber gloves and is protected by patent. It comes in two-colored effects, the horns being in contrast with the balloon body.—The Anchor Rubber Co., Barberton, Ohio.

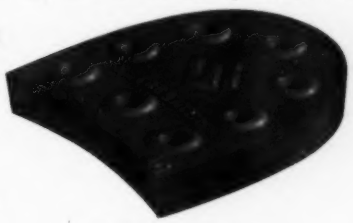
The "Devil-Head"

Convenient Heel

A new rubber heel, for the repair trade especially, has the nailholes located well in from the edge to give range in fitting but also to give a tight edge. The back of the heel is designed to fit readily any type of heel base and the rand is extra long to permit trimming and still leave the edge tight. The unusual feature of the Seiberling heel is that a self-sealing gum is applied to the back during manufacture. This is protected by a piece of holland until used, when the holland is removed. The tackiness of this gum may then be increased by solvent furnished with the heel without charge.—Seiberling Rubber Co., Barberton, Ohio.



Back of Heel



Seiberling Heel

"U-PRESSIT" CAPS FOR jelly tumblers are used with Mason rubber jar rings. To close over the ring, press the sides and to open, press the center.—Upressit Products Corporation, 15-21 Wilbur avenue, Long Island City, New York.

Activities of The Rubber Association of America

Semi-Annual Questionnaire

THE customary semi-annual questionnaire addressed to manufacturers, reclaimers, importers and dealers, calling for sundry information, was distributed at the close of the first half-year and a considerable number of companies have supplied the desired data. The work of gathering in responses from others who have not yet attended to the matter is progressing as vigorously as practicable. It should be possible to compile and distribute the report of grand totals not later than the middle of August.

Association Meetings

Tire Executive Committee

The regular monthly meeting of the Tire Executive Committee in July was postponed from the 19th to the 26th in order that action by sub-committees on matters before the general committee might be developed. The meeting was held at the Yale Club as usual and was well attended.

Industrial Relations Committee

The enlarged Industrial Relations Committee held meetings at the Association office on Thursday and Friday, July 27 and 28, which were attended by almost every member of the new committee. Many phases of the labor situation were discussed and much interesting information developed concerning hourly rates, working conditions and general labor considerations.

Executive Specification Committee

On Thursday, July 27, the Executive Specification Committee held another meeting at the Association office to advance its work of collaboration with the Bureau of Standards and other specification-writing bodies in the interest of uniformity and practicability in specification requirements. Very satisfactory progress was made in disposing of the details involved and it is expected that early in August it will be possible for the Committee to offer to the Bureau of Standards and other interested bodies tangible results of its work.

Board of Directors Omits Summer Meetings

At the June meeting of the Board of Directors it was decided to omit the July and August meetings, with the understanding that the Executive Committee can be called together to handle any matters requiring prompt attention.

TIRE COMPANIES ANNOUNCE PRICE REDUCTIONS

Leading tire companies of this country are now making more or less sweeping reductions in the prices of their tires and tubes, the new lists cancelling all previous ones. Changes which affect some of the most popular tire sizes are given below, as reported by some of the well-known companies. For example the United States Tire Co., Broadway and 58th street, New York, N. Y., has prepared new lists of prices for the Hartford, G. & J. and Revere casings and tubes, these not subject to the Federal excise tax. Some of the new prices for this company's Royal cord and fabric casings, where the Federal tax is included, are as follows:

	Size		Fabric: Cord	Fabric: Usco	Fabric: Nobby	Grey Tube	Red Tube
U. S. Royal	30 x 3½	Cl.	$16.25	.....	.....	.....	.....
U. S. Royal	32 x 4	S. S.	32.40	.....	.....	$3.30	$3.8
U. S. Royal	33 x 5	S. S.	52.15	.....	.....	5.15	5.8
U. S. (fabric)	30 x 3	Cl.	.....	$10.40	$12.90	.....	.....
U. S. (fabric)	30 x 3½	Cl.	.....	10.90	15.90	.....	.....
U. S. (fabric)	32 x 4	S. S.	.....	24.50	28.65	.....	.....
U. S. (fabric)	32 x 4½	S. S.	.....	.....	37.60	.....	.....
U. S. (fabric)	33 x 5	S. S.	.....	.....	.....	.....	.....

The B. F. Goodrich Rubber Co., Akron, Ohio, which makes no extra charge for excise tax, publishes new prices for cord and fabric tires, some of the changes being as follows:

Silvertown Cords: Size		Base Line Price	Fabric Tires: Size		Base Line Price
30 x 3½	Cl.	$13.50	30 x 3	"55"	$9.65
32 x 4	S. B.	29.15	30 x 3½	"55"	10.65
32 x 4½	S. B.	37.70	32 x 4	S. B.	21.20
33 x 5	S. B.	46.95			

New prices, plus tax, for Firestone Tire & Rubber Co.'s gum-dipped cord and fabric tires are quoted at:

	Size	Cord		Size	Fabric
(Regular)	30 x 3½	$13.75	(Oldfield "999")	30 x 3½	$ 8.99
(Extra)	30 x 3½	17.50		30 x 3½	10.65
	32 x 4	32.40			
	32 x 4½	41.90			
	33 x 5	52.15			

Tire and tube prices, effective June 12, which include the Federal excise tax, are reported by The Goodyear Tire & Rubber

Report of Inventory—Production—Domestic Shipments of Pneumatic Casings—Inner Tubes—Solid Tires, Etc.

	Pneumatic Casings				Inner Tubes				Solid Tires			
Month	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments	No. Mfrs. Reporting	Inventory	Production	Shipments
June, 1921	63	4,154,456	2,313,265	2,643,850	60	3,835,098	2,359,928	3,232,673	11	240,336	28,395	49,867
July, 1921	63	3,892,037	2,570,524	2,757,581	61	3,122,815	3,020,981	3,603,248	11	220,003	35,123	55,678
August, 1921	66	3,934,853	3,043,187	2,894,442	64	3,649,319	4,430,152	3,804,060	11	216,367	55,694	66,866
September, 1921	63	3,340,798	1,929,268	2,047,929	62	3,827,830	3,274,822	2,645,758	11	161,832	37,441	50,276
October, 1921	64	3,545,030	1,928,271	1,675,169	64	4,732,016	2,843,918	2,016,371	10	163,299	46,274	45,911
November, 1921	64	3,908,342	1,756,555	1,342,519	63	5,203,568	2,126,211	1,540,299	10	173,451	43,537	34,556
December, 1921	64	3,696,519	1,839,738	1,980,264	64	4,731,021	2,070,098	2,522,710	10	168,515	40,478	39,520
January, 1922	66	4,174,216	2,055,134	1,596,806	66	5,246,647	2,343,393	1,889,724	11	181,769	40,224	33,294
February, 1922	66	4,691,329	2,084,308	1,562,365	65	6,141,956	2,596,774	1,702,583	11	183,448	39,492	36,805
March, 1922	63	5,183,286	2,645,790	2,073,963	63	6,991,118	3,017,511	2,090,737	11	182,197	49,433	48,350
April, 1922	65	5,464,336	2,401,187	2,086,651	65	7,230,096	2,650,573	2,329,343	11	173,748	46,664	52,309
May, 1922	65	5,523,095	2,721,503	2,639,273	65	7,189,552	2,970,696	2,938,947	11	170,904	57,640	60,711

"Production" and "Shipment" figures cover the entire month for which each report is made. "Inventory" is reported as of the last day of each month.

"Inventory" includes tires and tubes constituting domestic stock in factory and in transit to, or at, warehouses, branches (if any), or in possession of dealers on consignment basis, and as a total represents all tires and tubes still owned by manufacturers as a domestic stock.

"Shipments" includes only stock forwarded to a *purchaser* and does not include stock forwarded to a warehouse, branch, or on a consignment basis, or abroad.

Compiled by The Rubber Association of America, Inc.

Co., Akron, Ohio. The following represents some of the changes:

Size	Cord	Fabric		Tubes
30 x 3 Cl.	.....	(Smooth tread) $9.85	(All-weather) $11.40	$2.00 (Regular); 2.40 (Heavy Tourist)
30 x 3½ Cl.	.....	(Cross-rib) $10.95	(All-weather) $13.50	2.25 (Regular); 2.80 (Heavy Tourist)
30 x 3½ Cl.	(Cross-Rib) $13.50 (All-weather) $16.25	.....	.....	2.25 (Regular); 2.80 (Heavy Tourist)

Size	Cord (All-weather)	Fabric (Cross-rib)	Fabric (All-weather)	Tubes
30 x 3½ S. S.	.....	$15.85	.....	2.25 (Regular); 2.80 (Heavy Tourist)
32 x 4 S. S.	$32.40	25.45	$25.45	3.25 (Regular); 3.70 (Heavy Tourist)
33 x 5 S.S.	52.15	39.10	.....	5.70 (Heavy Tourist)

The Mason Tire & Rubber Co., Kent, Ohio, announces prices, effective July 15, for heavy-duty, oversize cords to be as follows:

Size	List Price	Size	List Price
30 x 3½ Cl.	$13.95	32 x 4½	$30.75
30 x 3½ S. S.	15.80	33 x 5	38.95
32 x 4	24.50		

Changes in tire prices are announced by the Pennsylvania Rubber Company of America, Inc., Jeannette, Pennsylvania, in its net price list, as follows:

Size	Vacuum Cup Cord Casings	Size	Vacuum Cup Fabric Casings
30 x 3½ (4 ply) S. S. & Cl.	$15.75	30 x 3 Cl.	$10.15
30 x 3½ (6 ply) S. S. & Cl.	21.40	30 x 3½ S. S. & Cl.	11.95
32 x 4 S. S.	29.25	32 x 4 S. S.	19.40
32 x 4½ S. S.	37.70		
33 x 5 S. S.	47.00		

A list of consumer's prices (net to the consumer) as prepared by the Anderson Rubber Works, Anderson, Indiana, includes among several changes the following:

Size	Cords (Extra Heavy)	(Standard) Fabric	Red Tubes
30 x 3½	$18.30	$10.90	$2.80
32 x 4	32.50	22.90	3.70
33 x 5	53.20	.....	5.70

Hydro-Toron tires and tubes, manufactured by The Hydro-United Tire Co., Inc., Pottstown, Pennsylvania, are subject to an excise tax extra, while prices for both tires and tubes, effective May 15 and June 15, respectively, are subject to change without notice.

Size	List Price Tires	List Price Tubes
30 x 3 Cl.	$11.60	$2.00
30 x 3½ Cl.	14.00	2.25
32 x 4 S. S.	25.45	3.25
32 x 4½ S. S.	34.05	4.15
33 x 5 S. S.	41.25	5.00

The Obituary Record

Footwear Factory Superintendent

Philip C. Benjamin, superintendent of the Boston Shoe Co., Malden, Massachusetts, died on June 21.

Born in Malden in 1876, he was educated in the Malden public schools and after gaining valuable business experience, he went to work for the Boston Rubber Shoe Co. twenty-five years ago.

His promotion was rapid, and when George L. Lawrence became superintendent, following the resignation of Walter L. Piper, he was made assistant superintendent. About four and a half years ago Mr. Lawrence became factory manager and Mr. Benjamin was promoted to superintendent.

He was a member of Converse Lodge of Masons, the Kernwood Club and the Chamber of Commerce. Surviving him are his widow, two sons, and a sister.

News of his death was a great shock to his many friends, business associates and employes who loved and respected him.

Well Known in Eastern Rubber Circles

Henry Montgomery, who was identified with the rubber industry for many years, died suddenly June 25, in the 54th year of his age.

Henry Montgomery

Born May 15, 1869, he was educated at the Polytechnic Institute, Brooklyn, and the Cathedral School in Garden City, Long Island. After about two years, in the leather business, he became identified with the New York Rubber Co., 84 Reade street, New York, N. Y. Here he rose, step by step, to the position of vice-president and general manager of the factory at Beacon, New York.

Due to a nervous breakdown early in 1921, he resigned from the New York Rubber Co., and gave up all business connections in the futile hope of regaining his health.

Mr. Montgomery was a member of the Montauk Club in Brooklyn, the Southern Dutchess County Club of Beacon, and was a director of the Mattewan National Bank, and also of the Beacon Chamber of Commerce.

He was a man of quiet tastes and retiring disposition but had many friends in the trade, who will regret his untimely death. He is survived by his widow and two sons.

Veteran New England Rubber Man

John S. Patterson, of the Mechanical Rubber Co., Chicago, Illinois, died June 4. He came from the north of Ireland and was elevator boy in the Boston office of the Revere Rubber Co. H. C. Morse started him in the Providence factory where he rose rapidly and became assistant superintendent, superintendent, and factory manager. In all he was connected with the Providence plant for nearly thirty years, ten of which he was factory manager. In 1912, in association with Francis H. Appleton, of Boston, Massachusetts, and others, he organized and became president of the Patterson Rubber Co., which erected a factory at Lowell, Massachusetts, for the purpose of manufacturing tires. His son, James M. Patterson, was vice-president and factory manager. In 1914 both father and son resigned from the directorate and sold their holdings in the company.

John S. Patterson

For four years thereafter Mr. Patterson was president of the Needham Tire Co., Charles River, Massachusetts, and for the past four years has been with the United States Rubber Co., being connected with the Mechanical Rubber Co., of Chicago, Illinois. His widow and two sons survive him.

President of Syracuse Rubber Company

Edward R. Caldwell, president of the Syracuse Rubber Co., Syracuse, New York, whose death occurred recently, was a man of wide practical experience. Beginning work at an early age in a brass foundry, he became instrumental in establishing, in 1908, the Caldwell & Ward Brass Co., of Syracuse, New York, and later the E. R. Caldwell & Son Brass Co., of the same city. Since 1919 he has acted as president of the Syracuse Rubber Co., having held that position since the establishment of the organization. Mr. Caldwell was born March 26, 1864, in Peoria, Illinois, but has spent the most of his life in Syracuse.

Motor Vehicle Registrations and Revenues for the Year 1921

States	Total Car and Truck Registration	Passenger Cars	Trucks and Commercial Cars	Taxis and Busses	Trailers	Motorcycles	Re-registration or Transfers	xx Total Gross Motor Vehicle Registration and License Revenues
Alabama	82,366	59,422	9,110	3,834	.....	810	.....	$1,147,265.00
Arizona	35,611	31,069	3,980	562	.....	440	1,638	195,969.75
Arkansas	67,408	66,480	928b	.....	4	174	.....	856,543.60
California	680,614	645,522	35,092	.....	2,421	17,729	220,000	6,834,089.52
Colorado	145,739	136,336	9,403	.....	45	2,868	10,883	906,059.27
Connecticut	134,141	108,692	24,112	1,337	.....	5,282	18,425	2,129,861.12
Delaware	21,413	21,413a	.....	.....	67	541	.....	375,469.00
Dist. of Columbia	40,625d	33,654	5,177	1,794	.....	1,101	.....	209,583.00
Florida	97,957	83,111	14,846	.....	.....	1,296	2,483	734,845.50
Georgia	131,976	131,976a	.....	.....	.....	1,232	2,232	1,705,941.24
Idaho	51,294	46,935	4,359	.....	.....	744	931	841,212.93
Illinois	663,348	583,441	79,907	.....	.....	8,898	.....	6,803,556.21
Indiana	400,342	357,025	43,317	.....	1,851	7,524	.....	2,422,227.00
Iowa	461,084	430,118	30,966	.....	344	3,897	112,994	7,719,127.47
Kansas(i)	289,539	267,891	21,648	.....	.....	2,271	4,393	1,400,000.00
Kentucky	126,802	110,602	15,025	1,175	.....	.....	.....	1,771,887.02
Louisiana	77,885	67,311	10,574	.....	.....	479	.....	453,276.00
Maine	77,527	67,591	9,936	.....	.....	1,525	7,949	1,004,750.25
Maryland	136,249	120,231l	11,597m	4,421	.....	5,271	11,085	2,460,162.04
Massachusetts	360,732	305,471	55,261	.....	472	12,048	45,000	4,717,389.30
Michigan	476,452	426,687	49,765	.....	4,330	6,195	42,996	6,751,924.51
Minnesota	323,475o	299,100	24,375	.....	820	3,150	15,900	5,672,424.61
Mississippi	65,039	65,039a	.....	.....	.....	.....	.....	751,946.63
Missouri	346,437	346,437a	.....	.....	.....	3,609	17,850	2,505,353.90
Montana	58,785	58,785a	.....	.....	.....	472	650	594,530.50
Nebraska	238,704	219,781	18,923p	.....	322	1,866	16,920	2,824,811.25
Nevada	10,821	10,000q	821	.....	.....	131	156	102,800.00
New Hampshire	42,039	36,994	5,045	.....	.....	2,358	6,045	876,322.14
New Jersey	272,994	248,477	24,517	.....	857	9,724	52,849	3,974,063.75
New Mexico	22,559	21,155	1,404	.....	.....	152	500	198,632.77
New York(r)	812,031	630,791	148,553	32,687	3,213	26,998	.....	10,288,858.25
North Carolina(i)	148,627	134,884	13,743	.....	.....	1,274	.....	2,259,240.43
North Dakota	92,644	90,221	2,423	.....	.....	811	6,261	683,052.45
Ohio	720,634t	622,044	98,590	.....	4,801	17,203	32,878	6,894,159.73
Oklahoma	221,300	221,300a	.....	.....	.....	1,013	.....	2,619,713.49
Oregon	118,198	103,735	14,360u	103	290	3,164	.....	2,334,931.25
Pennsylvania	689,589	632,541	57,048	.....	951	21,111	75,559	9,470,174.31
Rhode Island	54,608	43,662	9,693	1,253	41	1,751	7,593	848,723.59
South Carolina	89,836	82,993	6,843	.....	59	.....	1,394	741,114.79
South Dakota	119,274	110,997	8,277	.....	.....	.....	.....	720,587.00
Tennessee	117,025	102,795	14,230	.....	.....	1,043	6,309	1,387,870.10
Texas	467,616	467,616a	.....	.....	.....	3,905	113,809	3,806,395.25
Utah	47,485	40,562	6,923	.....	.....	909	.....	441,359.88
Vermont	37,265	33,778v	3,487	.....	.....	965	4,196	668,288.50
Virginia	139,200	122,000	17,200	.....	.....	2,100	10,100	2,021,146.09
Washington	185,359	154,239	27,739w	3,381	797	3,913	12,727	3,140,730.74
West Virginia	93,940	77,397	16,543	.....	.....	1,539	12,000	1,250,525.82
Wisconsin	341,841	320,577	21,264	.....	.....	6,423	17,153	3,671,645.50
Wyoming	26,866	23,966	2,900	.....	.....	322	609	288,121.88
Totals	10,463,295	9,432,844	979,904	50,547	22,685	196,231	892,467	$122,478,654.33

a Includes motor trucks.
b Trucks registered separately only since May 1.
d Does not include 8,439 non-resident passenger cars and 1,023 non-resident trucks.
i For period July-December inclusive.
l Includes approximately 12,000 non-resident passenger cars.
m Includes approximately 2,000 non-resident trucks.
o Does not include 1,752 cars and trucks owned by State, cities and counties.
p Includes motor bus registration.
q Does not include 179 cars owned by State and cities.
r For period February-December inclusive.
t Does not include 2,800 cars and trucks owned by State, cities and counties.
u Includes 5,223 commercial vehicles of less than 1 ton capacity.
v Does not include 490 cars and trucks owned by State and cities.
w Does not include 1,891 cars and trucks owned by State.
xx Does not include revenues derived from gasoline taxes.

U. S. Department of Agriculture, Bureau of Public Roads.

THERE were 10,463,295 motor vehicles registered in the United States in 1921. New York had the largest state registration with 812,031 motor vehicles. California was the largest passenger car state with a registry of 645,522 cars. Eighty-three per cent of the world's registration is in the United States, where there are 11 persons per motor vehicle and 99 motor vehicles per 1,000 population. Revenues from licenses and fees were $122,478,654.

PAPER FROM RUBBER

Paper manufacturers in all parts of the world are becoming interested in the recent invention for using rubber latex in making paper. The process, which was invented by Frederick Kaye, a Fellow of the Royal Chemical Society, has been fully described in previous issues of THE INDIA RUBBER WORLD.

The Paper Division of the Department of Commerce has been in communication with Mr. Kaye through the department's London representative. He has sent 500 gallons of latex, which is being distributed to manufacturers who arranged with the Paper Division for defraying the cost of transportation from the East Indian plantations. These manufacturers are desirous of making experiments to determine the possibilities of its improving the various kinds of paper which they make. The United States Bureau of Standards will also conduct experiments and will publish its results for the general information of the paper industry.

If the results of experiments in the United States warrant it, and if interest in the process is sufficient, Mr. Kaye will come to this country shortly to confer with paper manufacturers and others desirous of knowing more about the process.

If rubber latex proves commercially successful as a constituent of paper, it will be a new article of international commerce.

LIQUID RUBBER ROAD DRESSING

Liquid rubber as a road-surface dressing is being tried out on the Darley road, one of the most used thoroughfares in the municipality of Colombo, Ceylon. The solution, made from pure bark and scrap rubber, is easier to handle than tar, and although the original cost of application is from 50 to 75 per cent more than tar, the rubber dressing is said to last twice as long.

The formula for the solution, which is a secret, was invented by a Ceylon rubber planter, who is still working toward its perfection. It is anticipated that a slight difference in the cost of material, in favor of the rubber dressing, will be found; that labor cost will be reduced 50 per cent at least; and that a better road surface will be procured.

News of the American Rubber Trade

Financial

DIRECTORS of Paramount Rubber Consolidated Inc., Little Falls, New Jersey, have declared the regular quarterly dividend of 1¾ per cent on the preferred stock, payable August 2 to holders of record on July 22. Dividends have been paid every quarter since incorporation of the company.

Goodrich Bond Issue

A new issue of $20,000,000 of The B. F. Goodrich Co. first mortgage 25-year 6½ per cent gold bonds is offered by a syndicate composed of the Bankers Trust Co., Guaranty Company of New York and Goldman, Sachs & Co. at 97 and accrued interest to yield 6.75 per cent. The bonds are dated July 1, 1922, and mature July 1, 1947. The issue has beeen largely oversubscribed.

The bonds will be secured by a first mortgage lien on all the fixed assets of the Goodrich company now owned or hereafter acquired, together with pledge of stocks of certain subsidiary companies, subject, however, as to after-acquired properties to existing liens or purchase money mortgages.

An annual sinking fund will be provided, sufficient to retire each year until July 1, 1927, at least 2½ per cent of the largest principal amount of bonds outstanding prior to the date of each payment into the sinking fund, such fund to be applied to the purchase of bonds at not exceeding 102 and accrued interest. During the eight-year period ended December 31, 1921, earnings available for interest before Federal taxes, but after average depreciation charges, are $1,431,000 annually and including the loss of $10,921,000 incurred in 1921, largely due to inventory adjustments, averaged $9,421,000 annually.

New York Stock Exchange Quotations

JULY 25, 1922

	High	Low	Last
Ajax com.	14	13⅜	13⅝
Fisk com.	14⅜	14	14⅜
Goodrich com.	38½	38	38
Goodrich pfd.	87⅝	87⅛	87⅝
Kelly-Springfield com.	47⅛	45½	46¾
Keystone com.	11	9⅞	10½
Lee com.	28⅛	28⅛	28⅛
United States Rubber com.	60¼	58¾	60

Akron Rubber Stock Quotations

Quotations of July 25, supplied by App-Hillman Co., Akron, Ohio.

	Bid	Asked
Firestone com.	80	81
Firestone 6% pfd.	90	91¼
Firestone 7% pfd.	87	88
General com.	230	.....
General pfd.	92	.....
Goodrich com.	38	38¾
Goodrich pfd.	87½	88¼
Goodrich 7% notes.	103⅜	103⅝
Goodrich 6½% bonds.	100½	101
Goodyear com.	10¾	11
Goodyear pfd.	33½	34¼
Goodyear prior pfd.	69¼	70
Goodyear 8% bonds.	115½	116
Goodyear 8% deb.	101⅜	101¾
India Rubber	76	.....
India Rubber pfd.	77	.....
Mason com.	11	12
Mason pfd.	54½	56
Miller com.	70	72
Miller pfd.	90	94
Seiberling com.	9¾	10¼
Seiberling pfd.	55½	58½
Star Rubber com.	.....	25

Dividends Declared

COMPANY	STOCK	RATE	PAYABLE	STOCK OF RECORD
Allis-Chalmers Manufacturing Co., Inc.	Com.	$1.00 q.	Aug. 15	July 24
American Rubber & Tire Co.	Pfd.	2% q.	July 1	June 30
Bliss, E. W., Co.	Com.	$0.55 q.	July 1	June 22
Bliss, E. W., Co.	1st Pfd.	$1.00 q.	July 1	June 22
Bliss, E. W., Co.	2nd Pfd.	$0.15 q.	July 1	June 22
Brunswick-Balke-Collender Co.	Pfd.	1¾% q.	July 1	June 20
Corn Products Refining Co.	Com.	1% q.	July 20	July 8
Corn Products Refining Co.	Com.	½% ex.	July 20	July 3
Corn Products Refining Co.	Pfd.	1¾% q.	July 20	July 3
Driver-Harris Co.	Pfd.	1¾% q.	July 1	June 30
Firestone Tire & Rubber Co.	6% Pfd.	1½% q.	July 15	July 1
Firestone Tire & Rubber Co.	7% Pfd.	1¾% q.	Aug. 15	Aug. 1
Hodgman Rubber Co.	Pfd.	$2.00 q.	Aug. 1	July 20
Hood Rubber Co.	Pfd.	1¾% q.	Aug. 1	July 20
Insulated Wire Co.	Com.	$1.50 q.	Aug. 3	July 31
Kelly-Springfield Tire Co.	8% Pfd.	$2.00 q.	Aug. 15	Aug. 1
Mason Tire & Rubber Co., The.	Pfd.	1¾% q.	July 1	June 25
Paramount Rubber Consolidated, Inc.	Pfd.	1¾% q.	Aug. 2	July 22
Philadelphia Insulated Wire Co.	Com.	$1.50 s.a.	Aug. 3	July 31
United States Rubber Co.	1st Pfd.	2% q.	July 31	July 15

New Incorporations

A. C. Rubber Co., The, June 20 (Ohio), $10,000. W. R. Huntington; G. W. Dewhurst; M. Wilder; J. A. Elbert; F. A. Stetson. Principal office, North and Lodi streets, Elyria, Ohio. To manufacture rubber balloons, heels, gloves, etc.

Ace Rubber Co., May 24 (New Jersey), $50,000. C. A. Wilson; E. H. Unkles—both of Trenton, New Jersey; C. H. Lambelet; C. W. Keuffel—both of Weehawken, New Jersey. Principal office, Hudson Boulevard and Blum street, Town of Union, New Jersey. To manufacture, buy, sell, import and export tires and tubes.

Atlas Asbestos Co., June 1 (Pennsylvania), $25,000. J. C. Johnston, president; W. and H. L. Johnston, all of Norristown, Pennsylvania. Principal office, Norristown, Pennsylvania. To deal in asbestos and rubber goods.

Bucher Sales Co., The, June 6 (Ohio), $25,000. G. W., J. D., and S. W. Bucher; L. C. Taylor; B. S. France. Principal office, 141 North Broadway, New Philadelphia, Ohio. To deal in tires and accessories.

Burkoe Tire & Rubber Co., June 22 (Delaware), $350,000. C. H. Jarvis; L. B. Phillips; J. M. Satterfield, all of Dover, Delaware. Delaware agent, United States Corporation Co., Dover, Delaware. To manufacture tires and tubes.

Citizens Tire & Auto Supply Co., May 27 (North Carolina), $100,000. R. Sams; L. D. Walker; C. M. Strong, all of Charlotte, North Carolina. Principal office, Charlotte, North Carolina. To deal in tires.

Convoy Corporation, June 29 (Delaware), $100,000. C. H. Jarvis; L. B. Phillips; J. J. Hartnett; all of Dover, Delaware. Delaware agent, United States Corporation Co., Dover, Delaware. To manufacture tires, tire fabrics, tire materials and accessories.

Crescent Armored Wire Co., May 18 (New Jersey), $500,000. C. E. Murray, president; C. E. Murray, Jr.; J. C. Murray, treasurer; A. H. Battye, secretary. Principal office, corner Olden avenue and Taylor street, Trenton, New Jersey. To manufacture insulated wire.

Cushion Shoe-Tread Co., June 21 (Massachusetts), $100,000. M. D. Riso, president, 207 North street; R. C. Martini, treasurer, 294 Hanover street; G. Avallone, 70 Chelsea street, East; P. Dei Buono, 35 Parmenter street, all of Boston, Massachusetts. Principal office, Boston, Massachusetts. To manufacture rubber parts for boots and shoes.

Diestler Tire Co., May 24 (Wisconsin), $24,990. H. O., H. A. and V. M. Diestler. Principal office, Kenosha, Wisconsin. To deal in tires.

Eno Rubber Corporation, April 12 (California), $500,000. R. R. Musser, president; W. J. Voit, vice-president; G. K. Norton, secretary-treasurer. Principal office, 1026 South Los Angeles street, Los Angeles, California.

Ferguson Motor Supply Corporation, June 17 (Delaware), $250,000. T. L. Croteau; M. A. Bruce; C. H. Blaske; all of Wilmington, Delaware. Delaware agent, Corporation Trust Company of America, DuPont Building, Wilmington, Delaware. To deal in automobile rims.

Fidelity Service & Adjustment Co., The, June 6 (Ohio), 2,000 shares no par value. H. F. Daench; H. W. Pleasant; E. L. McCleary; P. Ackerman; E. C. Baver. Principal office, Schwind Building, Dayton, Ohio. To deal in tires and tubes.

Heavy Duty Apron & Rubber Co., The, May 17 (Ohio), $5,000. S. N. and B. Paradise; L. H., E. and N. Arenson. Principal office, Akron, Ohio. To manufacture rubber aprons and rubber products.

House That Jack Built, The, May 5 (Wisconsin), $1,000. J. Wreiner, president, 804 Hackett avenue; J. E. Fitzgibbons, vice-president, 220 Broadway; W. Wreiner, secretary and treasurer, 220 Broadway, all of Milwaukee, Wisconsin. Principal office, 406 Gross Building, Milwaukee, Wisconsin. To furnish technical information and shopping service to the motoring public, including the purchase of tires and accessories.

Huebner Tire & Supply Co., The, June 14 (Ohio), $10,000. R., H. E., H. L., C., and L. Huebner. Principal office, 447 Michigan street, Toledo, Ohio. To deal in wholesale and retail tire business.

Hunt-Graham Tire Co., May 2 (Illinois), $20,000. L. H. Hunt, Eldorado, Kansas; J. A. and E. K. Graham, both of 293 South Lake street, Aurora, Illinois. Principal office, 293 South Lake street, Aurora, Illinois. To manufacture tires.

Iten Fibre Co., The, May 20 (Ohio), $50,000. C. J. Iten; J. P. Thompson; W. I. Dawley; E. K. Curtiss; G. S. Myers. Principal office, Cleveland, Ohio. To manufacture rubber and metal products.

Kirchner Tire & Supply Co., May 19 (Ohio), $10,000. A. Silverstein; B. Fletcher; H. Kirschner; W. C. Grob; J. W. Cowell. Principal office, 1003 Race street, Cincinnati, Ohio. To manufacture and deal in tires and tubes.

Non-Puncture Tire Co., June 24 (New York), $50,000. G. A. Reynolds; G. A. Reynolds, Jr.; F. H. Wilbur, all of Binghamton, New York. Principal office, Binghamton, New York. To manufacture tires.

O'Bannon Airless Tire Corporation, June 30 (Delaware), $250,000. J. V. Pacher; A. J. Prattinger; E. H. Klinglefus, all of 8 East 14th street, New York City. Delaware agent, Woodburn Martin, Georgetown, Delaware. To manufacture and deal in tires.

Old Hickory Tire & Tube Co., [illegible]ce 13 (Tennessee), $6,000. V. J. Rottero, president; C. Rottero, secretary and treasurer. Principal office, 1159 Broadway, Nashville, Tennessee. To distribute tires and tubes.

Parker, F. A., Co., June 8 (Massachusetts), $50,000. F. A. Parker, Jr., president; A. L. Robinson, Jr., treasurer; W. H. Vincent, 10 State street, Boston, Massachusetts. Principal office, Marblehead, Massachusetts. To deal in rubber footwear.

Pathfinder Tire & Rubber Co., May 2 (Illinois), $1,000. S. H. Silverman, 5056 Sheridan Road, Chicago, Illinois. Principal office, 1736 South Michigan avenue, Chicago, Illinois. To manufacture tires and accessories.

Paynter Corporation, July 13 (Delaware), $300,000. T. L. Croteau; M. A. Bruce; C. H. Blaske, all of Wilmington, Delaware. To manufacture tires, tubes and rubber goods.

Poplar Bluff Rubber Co., March 27 (Missouri), $100,000. J. H. Patterson, president; W. E. Morrison, vice-president; C. B. Coleman, secretary and treasurer; R. E. Niemann, vice-president. Principal office, Poplar Bluff, Missouri. To manufacture sponge rubber inner tires.

Postal Life Syndicate, May 9 (Illinois), $25,000. P. and R. Reinsberg; E. Klauber, all of 1523 Michigan avenue, Chicago, Illinois. Principal office, 1523 Michigan avenue, Chicago, Illinois. To manufacture automobile tires and accessories.

Rochester Rubber & Textile Co., July 5 (Delaware), $1,500,000. M. M. Lucey; M. B. Reese; L. S. Dorsey, all of Wilmington, Delaware. Delaware agent, Colonial Charter Co., 927 Market street, Wilmington, Delaware. To manufacture tires, tubes and rubber goods, accessories and textile products.

Roxanna Tire & Rubber Co., The, June 5 (Ohio), $10,000. J. F. McCormack; C. N. Justice; G. D. Moore; W. B. Trosfer; E. W. Baker. Principal office, Akron, Ohio. To manufacture tires, tubes and other rubber goods.

S. & D. Battery Co., The, July 5 (New York), $5,000. W. A., G. B. Dodge, both of 164 Arnold Place; L. L., P. Sirianni, both of 420 Front street, all of Lackawanna, New York. Principal office, Lackawanna, New York. To manufacture batteries.

Seitz, J. C., & Co., July 17 (New York), $200,000. J. C., E. F. Seitz; H. F. Robinson, all of Buffalo, New York. Principal office, Buffalo, New York. To manufacture tires and tubes.

Short's Tire Service, June 10 (Kentucky), $100,000. J. T., H. A. Short; C. V. Lusske, all of Louisville, Kentucky. Principal office, Louisville, Kentucky. To deal in tires and accessories.

Simmons Tire Corporation, May 23 (Illinois), $100,000. C. E., H. S. Tracy, both of 4620 Clarendon avenue; H. L. Feigenholtz, 1255 Independence Boulevard, all of Chicago, Illinois. Principal office, 111 West Monroe street, Chicago, Illinois. To manufacture tires.

Singleton Tire Sales Co., The, June 17 (Ohio), $10,000. H. T. Singleton; W. F. Frye; G. W. Cowell; G. F. Stolman; P. S. Lietz. Principal Office, 1307 St. Clair avenue, Cleveland, Ohio. To deal in tires and tubes.

Spartan Rubber Co, June 20 (New Jersey), 26,000 shares, 1,000 preferred, 25,000 no par value. A. Newman, president; E. D. Newman, vice-president and secretary; S. Newman, treasurer. Principal office, 33 West State street, Trenton, New Jersey. To manufacture tires and "Spartan" tubes.

Stover Rubber Co., June 1 (Illinois), 500 shares, no par value. M. C. Suhr; E. E. Levy; I. K. Stover. Principal office, 1409 South Michigan avenue, Chicago, Illinois. To manufacture tires, tire making machinery and all kinds of tires.

Washington Rubber Co., The, May 19 (Ohio), $30,000. F. G. and M. C. Suhr; M. M. and T. P. Tyrell; G. Masion. Principal office, 760 Washington street, Akron, Ohio. To manufacture all kinds of rubber products.

The Rubber Trade in the East and South

Manufactured Goods

There was a noticeable slacking up in eastern rubber mills during the past month, which is customary at this time, due to the summer season. The exception, however, was in tire production, which continues unabated, especially in the output of small size tires that are being manufactured to meet competition. The reduction in tire prices that was made by certain large manufacturers during the month had a stimulating effect on eastern sales. Dealers, however, are in a quandary as to their status in the matter.

Rubber footwear has been seasonally quiet, but heel production continues to be about normal. Mechanical goods are all going fairly well considering the vacation period. It is expected that in August there will be a general slowing down in all departments of rubber manufacture for repairs and inventory taking.

New York

O. T. Beadle, connected with the export department of The Miller Rubber Co., 121-125 Duane street, New York, N. Y., sailed recently for Europe, to be gone from 12 to 18 months. While abroad he will make headquarters in Paris, and will visit the Miller distributers in Great Britain and all important countries of the Continent.

Officials of The Gutta Percha & Rubber Manufacturing Co., 126 and 128 Duane street, New York, N. Y., announce that in the near future the company's executive offices will be moved to the twelfth floor of the Borden Building, 45th street and Madison avenue, New York, N. Y. A vacant building, adjoining the Brooklyn factory, will also be converted into a wareroom and shipping office, and New York City deliveries will be made by automobile truck. It is believed that by the new arrangements much better shipping facilities both by boat and train will be procured, and that customers can be more promptly and efficiently served.

H. Gardner McKerrow, who, for the past three years, has been advertising manager for the National Aniline & Chemical Co., Inc., has resigned and will engage in business in New York on his own account as an advertising and merchandising consultant, specializing in textile and chemical products.

L. I. Ris, who had severed his connections with The Star Rubber Co., Akron, Ohio, has recently returned to that organization, as eastern district manager. Mr. Ris will make his headquarters in New York, N. Y., and will have charge of the company's sales in New Jersey, Delaware, Virginia, New England, Eastern New York, and Eastern Pennsylvania.

The American Zinc Sales Co., with main offices at Columbus, Ohio, has added another establishment to its list in the opening of the Knowlton warehouse, 93 Perry street, Buffalo, New York. This organization and the American Zinc Oxide Co. are subsidiaries of the American Zinc, Lead & Smelting Co.

Pennsylvania

Work on important equipment extensions is being rushed by The Pennsylvania Rubber Co., at the factories, Jeannette, Pennsylvania. The completion of these new units will place the company in position to turn out 5,000 tires and 7,000 tubes daily, effective about August 1.

Roscoe M. Gage, who has been acting as production superintendent at the Barberton plant of the Seiberling Rubber Co., Akron, Ohio, has been transferred to the company's factory at New Castle, Pennsylvania, where he will serve in the capacity of technical superintendent, and also assist in the management of the plant. As chief chemist Mr. Gage was for several years connected with the Portage Rubber Co., Akron, Ohio.

Eastern and Southern Notes

After his graduation from Ohio State University in June, 1917, H. C. Spindler, acting chief of the Rubber Division, Department of Commerce, Washington, D. C., was connected with the Goodyear organization until October, 1921. Following this he took up work as a correspondent and copywriter, later becoming interested in special field sales work. He has been associated with the Rubber Division since January, 1922.

At the 26th annual convention of the American Cotton Manufacturers' Association, which was held at Washington, D. C., several "Father and Son" groups were in attendance, among them William D. Anderson, president of The Bibb Manufacturing Co., maker of tire fabric at Macon, Georgia, and William D. Anderson, Jr. At this session Cason J. Callaway, one of the sons of Fuller E. Callaway, organizer of the well known group of Georgia cotton mills, was appointed a member of the nominating committee.

The Hanes Tire & Service Co., Charlotte, North Carolina, dealer in Hanes and Miller tires, and accessories, has let a con-

tract for an addition to its service station, which will more than double its present capacity.

The Keystone Tire and Rubber Co., Inc., Keystone Building, 1877 Broadway, New York, N. Y., has recently opened a branch store to be known as Keystone Tire Sales Co., No. 15, Inc., at 148 Drayton street, corner of Oglethorpe avenue, Savannah, Georgia.

J. T. Hunt, recently connected with the Bibb Manufacturing Co., Macon, Georgia, has returned to his former position with the Unity Spinning Mills, La Grange, Georgia. The last-mentioned organization, of which C. V. Truitt is president, is included in the group known as the Fuller E. Callaway chain of cotton mills.

The Rubber Trade in New Jersey

Manufactured Goods

The seasonable activity so strongly noted a month ago continues with the rubber manufacturers of Trenton. There is hardly a rubber mill in the city that is not being operated to its full capacity. The demand for garden hose has kept up wonderfully, jar rings have been in incessant demand, and other mechanical lines including belting particularly are prospering. Even the tire manufacturers report more than the average summer demand. Taken altogether Trenton rubber manufacturers can look back upon a very busy and prosperous first six months of the calendar year. That the last six months of the year may be equally prosperous is confidently expected.

New Jersey Notes

The Lambertville Rubber Co., Lambertville, has resumed operations in all its departments after having been closed for twenty days in order to take account of stock and make necessary repairs.

Regardless of the fact that the Braender Rubber & Tire Co., Rutherford, New Jersey, has increased its production to 500 tires and 1,500 tubes per day, M. E. Morris, general manager of the company, declares that the concern is about two weeks behind on orders. The production schedule, however, is being increased. Three new mixing mills have been installed, and a direct current generator set to generate power for the calender drive which will permit the tripling of the present output from the calender. Since the first of the year this company has opened between five and six hundred new accounts.

Officials of the Sterling Tire Corporation, Rutherford, New Jersey, report that they have been materially increasing their production as well as their personnel since early in 1921. By the middle of this summer it is expected that production will be 1,500 tires daily. Since February they have been running their plant on a twenty-four hour basis at top capacity which at present is 1,200 daily. Unless the capacity is considerably increased it is stated that they will be oversold by July as they are several thousand tires behind orders now.

The Premier Rubber Co., a recently formed corporation of New Jersey, has leased the factory buildings at 218 and 224 New street, Newark, New Jersey, for a term of five years with the privilege of purchase. The Premier company will equip the factory with special machinery for the manufacture of rubber heels, rubber balls and other rubber specialties. Operations were expected to begin August 1.

The Mercer County Board of Taxation has reduced the personal tax on the plant of the Zee-Zee Rubber Co., Yardville, New Jersey, from $50,000 to $15,000.

The Monmouth Vulcanizing Works, Inc., of Bradley Beach, New Jersey, has been incorporated at Trenton with $50,000 capital to engage in the vulcanizing business. The incorporators are Rudolph Anderson, Albert Klein and Joseph Pilling, all of Bradley Beach.

The Triest Building in New street, Newark, New Jersey, has been leased by the Premier Rubber Co., where special machinery is being installed for the manufacture of rubber balls, rubber heels and other rubber specialties. The Premier company, recently incorporated in New Jersey, expects to begin operation by August 1.

Trenton

Federal Judge Joseph L. Bodine at Trenton has ordered that Arthur H. Wood and C. Edward Murray, Jr., receivers of the Empire Tire & Rubber Corporation, Trenton, offer the plant for sale at a date not earlier than September 15. The sale will be held at either the plant or the Mercer County Court House at Trenton. This ruling follows the action taken by the Big Bend Coal Mining Co., of Philadelphia, Pennsylvania, a creditor, which filed papers in the United States District Court asking the stockholders and other creditors of the rubber company to show cause why the plant should not be sold.

The sales force of the Empire Tire & Rubber Corporation, Trenton, recently attended a three-day general conference at the Stacy-Trent Hotel, Trenton. The sales force, comprising sixty men, held a dinner and entertainment following the conference.

The Belle Mead Tire & Rubber Co. has opened an establishment at 115 South Warren street, Trenton.

William A. Howell, superintendent of the Whitehead Brothers Rubber Co., was a member of the Citizens' Committee in charge of the celebration of Independence Day at Trenton.

The Eastern Rubber Co., Trenton, has purchased the remaining stock of the Zee-Zee Rubber Co., consisting of tires and tubes.

R. B. Tracy has recently resigned his position with the Globe Rubber Tire Manufacturing Co., Trenton, where he has been in charge of general sales. Mr. Tracy was previously for 16 years one of the factory representatives of the Michelin Tire Co., Milltown, New Jersey.

Part of the sequel to the previous story of the alleged Kugler embezzlement is now forthcoming. It is claimed that Herbert W. Kugler and Harry L. MacGregory absconded with $28,000 in cash of the Globe Rubber Tire Co. They have been arrested after months of flight and search, Kugler in San Francisco, and MacGregory at Tahiti, one of the Society Islands in the Pacific ocean. The pair left Trenton on October 14 last. Both were officials of the Globe Rubber Tire Co., and Kugler as president was empowered to draw and sign checks. It is said that Kugler had a check drawn duly countersigned and brought to him for final signature with the amount left blank. He filled the check in for $28,000, wrote a letter of resignation to the Board of Directors, in which he informed them that he had drawn a check for the book value of the stock standing in his name, which he was leaving behind him in lieu of the $28,000. This alleged deception was pulled off just at the time when Kugler was about to leave on a two weeks' vacation kindly recommended to him by his Board of Directors because of his arduous duties. County Prosecutor Oliphant and Chief of County Detectives Kirkham were sent to San Francisco to bring back Kugler, and two detectives on the Mercer County staff will be sent to Tahiti for MacGregory. It will cost Mercer County about $4,000 to bring these two frenzied financiers to justice.

The Acme Rubber Manufacturing Co. is exceedingly busy, still running full day and night shifts. Its tonnage for the months of April, May, and June this year has exceeded any previous record for three months.

Ajax Rubber Co. continues to make up a big ticket of tires and tubes every week, and general manager McMahan is more than pleased at the volume for the first six months of this year.

Essex Rubber Co. is maintaining its high production record in the various lines which it manufactures.

Hamilton Rubber Manufacturing Co. was never any busier than at present. An increased demand for jar rings, garden hose, fire hose and belting has kept the production of this company at a high mark.

Horace B. Tobin, secretary and general manager of the Woven Steel Hose & Rubber Co., and also an official of the United & Globe Rubber Co., Trenton, sailed recently with his wife and daughter for a tour of Europe. They will visit several foreign countries and remain abroad until September.

Creditors of the Nottingham Rubber Co., Trenton, are now presenting their claims to the receiver, George Gildea, who has been ordered by the court to wind up the affairs of the corporation.

The Rubber Workers' Union, Trenton, has suggested that the members of the Trenton Chamber of Commerce who own automobiles should purchase their automobile tires in Trenton, where a half a million of tires are produced annually, instead of seeking and purchasing the product of factories in other cities. The Rubber Workers' Union claims that if tires made in Trenton are good enough for non-residents to use they should be good enough for Trentonians.

The Belle Mead Tire & Rubber Co. has established a branch at 115 South Warren street, Trenton.

The Rubber Trade in Rhode Island

There is little, if any, change in business conditions among the rubber manufacturing concerns in Rhode Island from what was reported a month ago. There is an optimistic feeling prevailing that the remaining months of this year are going to be attended by a business improvement that may tend to reestablish the industrial world on a plane closer to normalcy than has been the case in several years.

About the middle of the past month the State Tax Commissioners made public their annual list in accordance with law, of the manufacturing corporations having a corporate excess upon which a tax has been assessed. This list has been filed with the General Treasurer and the tax assessment certified to him for collection. The total corporate excess upon which taxes have been levied this year is $290,423,844.76 compared with the total of $320,479,151.91 for last year; however, there is shown a deficiency of $30,055,307.05 for this year. This decrease shows more eloquently than columns of text, the unusually heavy industrial depression that was experienced here during the year 1921.

Among the corporations identified with the rubber industry assessed on a corporate excess of $100,000 or more, together with the amount of tax assessed to each, are the following:

American Electric Works, Phillipsdale, excess, $2,078,455.83, tax, $8,313; American Emery Wheel Works, excess, $204,676.14, tax, $818.70; American Multiple Fabric Co., excess, $122,210.88, tax, $488.84; American Webbing Co., excess, $143,136, tax, $572.54; Anchor Webbing Co., Pawtucket, excess, $118,559.13, tax, $474.23; Atlantic Tubing Co., excess, $128,477, tax, $513.90; Bourn Rubber Co., excess, $283,591.54, tax, $1,134.36; Brown & Sharpe Manufacturing Co., excess, $4,636,430.47, tax, $18,545.72; Collyer Insulated Wire Co., Pawtucket, excess, $443,102.13, tax, $1,772.40; Davol Rubber Co., excess, $299,096.77, tax, $1,196.38; Everlastik, Inc., Chelsea, Massachusetts, excess, $407,211.07, tax, $1,628.84; Glendale Elastic Fabrics Co., Easthampton, Massachusetts, excess, $135,096.63, tax, $540.38.

Goodyear Tire & Rubber Co., Akron, Ohio, excess, $126,049.07, tax, $504.10; George Grow Tire Co., Boston, excess, $128,141.91, tax, $512.56; Hamilton Web Co. (N. Y.) Hamilton, Rhode Island, excess, $138,085.60, tax, $552.34; Hill & Lacrosse, Cranston, excess, $110,186.37, tax $440.74; Hope Webbing Co., Pawtucket, excess, $1,231,868.50, $4,927.45; Jenckes Spinning Co., Pawtucket, excess, $4,918,182.05, tax, $19,672.72; Mechanical Fabric Co., excess, $709,354.30, tax, $2,837.41; Moore Fabric Co., Pawtucket, excess, $138,683.41, tax, $554.73; National India Rubber Co., Bristol, excess, $351,056, tax, $2,124.22; Nicholson File Co., excess, $3,034,844.64, tax, $12,139.37; Phillips Wire Co., Pawtucket, excess, $1,789,829.49, tax, $7,159.39; Providence Rubber Co., excess, $193,721.81, tax, $744.88; Revere Rubber Co., excess, $318,948.57, tax, $1,275.79; Tubular Woven Fabric Co., Pawtucket, excess, $140,276.50, tax, $561.10; United States Rubber Co., of New York, excess, $2,383,615.84, tax, $9,534.46; Walker Webbing Co., excess, $417,345.41, tax, $1,669.38.

Rhode Island Notes

The plant of the Atlantic Tubing Co., Knightsville, Rhode Island, is operating on a considerably reduced schedule and with slight order bookings ahead. The operating card calls for only about eight hours a day with a force that has been reduced to about one-half its normal size and even these are working at a reduced wage scale.

The plant of the Millville Rubber Co., the Millville branch of the Woonsocket Rubber Co., presents a more encouraging situation from the fact that on July 24, it began operating on a five-days a week schedule, to the great satisfaction of the operatives who have been working a four-days a week run for a number of months.

Bids have been secured for several mill buildings at the plant of the Columbia Narrow Fabric Co. at Shannock, Rhode Island. The plans include a weave shed of mill construction, 45 by 100 feet; a finishing building, one story and basement of mill construction, 50 by 95 feet and a power unit of brick and steel, 17 by 45 feet.

Providence

As the entire plant of the Hope Webbing Co., Inc., Providence, Rhode Island, is at present being used and more space has become necessary, a six-story addition is now being erected. This enlargement will supply approximately 100,000 square feet of floor space in addition to the present twelve acres occupied. Officials of the organization state that the main object in erecting this new building is to enable the company to resystematize some of its departments, with a view to the improvement of both its methods and product. C. A. Horton is general manager.

The Manhasset Manufacturing Co., with main offices at 1406 Turks Head Building, Providence, Rhode Island, announces two changes in its executive personnel. Thomas W. Lawton has been appointed superintendent of the company's Taunton plant, while James Harrison becomes general superintendent of all three plants, at Taunton, Massachusetts; Warren, Rhode Island; and Putnam, Connecticut. The organization specializes in the manufacture of tire fabric yarns.

Two hundred and fifty employes of the Davol Rubber Co. on July 15 held their annual outing at the Warwick Club grounds overlooking Narragansett Bay, the occasion being one of the best ever held by them. Chowder was served at noon and late in the afternoon an old-fashioned Rhode Island clambake was in order to which all did full justice. Following the bake the married and single men played their annual game of baseball in which the benedicts won by a score of 5 to 4, the game being called at the end of the fifth inning. The sports program kept things lively during the entire day, and during the afternoon there was dancing.

Brewer & Co., Inc., have opened a branch of the Brewer Tire Stores at 73 Fountain street, Providence, which is the eighth in its New England chain.

One of the most interested graduates attending the 154th commencement exercises at Brown University last month was former Governor Augustus O. Bourn, treasurer and director of

the Bourn Rubber Co. of Providence, who, as a member of the Class of 1855, is one of the oldest living graduates.

The Lee Tire & Rubber Co. of New York has opened new sales rooms at 338 Broad street, Providence, the manager being John J. Connors, for four years associated with the Lee Tire Co.

Pawtucket

Herbert O. Phillips, treasurer and director of the Phillips Wire Co., of Pawtucket; a director of the Appleton Rubber Co., of Franklin, Massachusetts, and Charles A. Horton, vice-president, general manager and director of the Hope Webbing Co., and a director of the American Webbing Co., have been elected directors of the newly established Pawtucket branch of the Rhode Island Hospital Trust Co.

Excavations began about the middle of the past month for the foundation of a five-story addition to the Hope Webbing Co.'s plant at Pawtucket. The new addition will be of modern mill construction, brick and steel, 191 feet long by 84 feet wide and will front on Esten avenue. The estimated cost of the building is $145,000.

The Davis-Jones Insulated Wire Co., Pawtucket, has purchased land and buildings at Phillipsdale, Rhode Island, and plans to be ready for production August 15. The company will manufacture a full line of rubber-insulated "Code Standard" wires and flexible cords, including cotton and silk cords, heater cords, automobile wires, and automobile lighting wires. While the bulk of the company's production will be confined to these wires, the plant is equipped to turn out radio cords as well. D. S. Davis is a member of the company.

Bristol

Commencing with July 20, the following changes in the organization of departments at the National India Rubber Co., plant became effective: Frederick L. Dunbar to be operating superintendent of the wire division; George E. Shaw to be production superintendent of the wire department and Clarence W. Higbee to be technical superintendent of the wire department.

Salesmen from several of the branch stores of the United States Rubber Co., visited the National India Rubber Co.'s plant at Bristol on June 28 and made an inspection of the works. The party included E. Stablehead, manager of the South African branch at Cape Town; H. C. Moorhouse of the exporting department, New York; G. F. Anderson, of Chicago; M. J. Tierney, of Detroit; P. S. Jackson, of Pittsburgh, Pennsylvania; H. Efjou, of St. Paul, Minnesota; E. F. Thalman, of Milwaukee; J. P. Moonan and W. H. P. Palmer of New York. The visitors were in charge of Maurice C. Smith, Jr., treasurer and R. W. Holt, manager, of the National India Rubber Co.

Woonsocket

Employes of the American Wringer Co. of Woonsocket, enjoyed a very pleasant outing at Oakland Beach on July 10. There were about sixty in the party which left Woonsocket early in the morning in automobiles and enjoyed the thirty-odd miles ride through countryside and along shore roads overlooking Narragansett Bay. An old-fashioned Rhode Island clambake was served at the Oakland Beach Yacht Club pavilion and during the afternoon races and games were enjoyed, ending with an exciting baseball game. The party returned home during the early evening.

The joint standing committee on fire department at Woonsocket has voted to award the contract for 1,000 feet of fire hose to the Fabric Fire Hose Co., for "Success" hose, wax and gum treated, at $1.15 per foot.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" should be in the library of every progressive rubber man.

The Rubber Trade in Massachusetts

Manufactured Goods

Rubber goods manufacture in this district continues to justify optimism, although some branches are much busier than others. Tire production is being curtailed a little, although sales are holding up well. Price cutting by manufacturers is undermining the confidence of dealers somewhat, however. In light mechanical lines business is good, while factories specializing in belting, packing and heavy hose are operating at about 60 per cent of capacity. The demand for molded goods and rubberized fabrics is improving, although competition is keen and the margin of profit very narrow. Rubber heel and sole production steadily increases, and in these lines also competition is keeping profits very low. The canvas footwear season is over and factories are now working on rubber footwear for fall and winter wear. Orders are better than last year but still leave considerable to be desired, especially in respect to light rubber footwear. Insulated wire and automobile topping continue in active demand. Clothing lines are picking up a little, though still very quiet.

National Shoe Style Show

The Third National Shoe and Leather Exposition and Style Show, which was held in Mechanics' Building, Boston, from July 10 to 13, inclusive, brought the entire shoe world to this city. There were in all 183 exhibitors who displayed about everything in footwear, materials and manufacturing methods. Model factories were engaged in every step of the manufacture of footwear from the tanning of hides to the finished shoe, while the style show with many living models on the runway of the main hall was, as in past years, one of the most popular features, especially among buyers. Much of the success of the manufacturing exhibits was due to the hearty cooperation of the United Shoe Machinery Corporation, which showed most of its many leather footwear machines in operation. From every standpoint the show was a distinct success, and exhibitors generally were well pleased with the new business booked.

Rubber and canvass footwear, rubber heels and soles were a more prominent feature of the show than ever before, 15 firms being represented. These, with their exhibits, were as follows: Automatic Heel Co., Automatic Quality rubber heels; Avon Sole Co., Aero Du-Flex soles; Cambridge Rubber Co., rubber footwear, featuring Radio boots; Converse Rubber Shoe Co., rubber footwear, including the Oh Boy gaiter, a Russian boot effect; Fellsway Rubber Co., Travelite rubber heels; Foster Rubber Co., Catspaw rubber heels; The B. F. Goodrich Rubber Co., rubber footwear, featuring the Pavlovo boot with astrakhan cuff; The Goodyear Tire & Rubber Co., Wing-Foot heels, Neolin soles and Goodyear Sport Bottoms, a combination of the two; Hanover Rubber Co., Nu-Life heels; Hood Rubber Products Co., Inc., complete line of rubber and canvas footwear; Larkide Co., Larkide soles of cotton with a binder of rubber; O'Sullivan Rubber Co., Inc., O'Sullivan Safety Cushion rubber heels; Panther Rubber Manufacturing Co., Tiger Tread rubber heels; Plymouth Rubber Co., Slip-Knot and Norfolk rubber heels and rubber mats; United States Rubber Co., complete line of rubber and canvas footwear, soft sole slippers and novelties, including Russian boots, Keds, Snug-ler felt footwear, Spring-Step heels and Uskide soles. Perhaps the most important features of this exhibit was an educational display supplied by the Boston Rubber Shoe Co. plant, showing the making up of various kinds of rubber footwear.

As a whole the rubber exhibits were indicative of the growing demand for rubber heels and soles and the keen competition in their design and production; also they were significant of the increasing importance of style in rubber footwear, the influence of "flapper" fads on design, and the application of colored linings to galoshes. While manufacturers have responded promptly to

the present whims of footwear fashion, they believe these whims are passing and that they will not oust the standardized models of rubber footwear which are the basis of the industry. They realize that novelties in footwear are neither profitable to manufacture nor economical to buy, and will not develop them to the extent of placing themselves in the present plight of leather shoe manufacturers.

Massachusetts Notes

The Cambridge Rubber Co., Cambridge, Massachusetts, has opened a branch in the Lees Building, 16 South Wells street, Chicago, Illinois, under the management of B. H. Shapiro, formerly with the Hood Rubber Co. and the Beacon Falls Rubber Co.

The Plymouth Rubber Co., Canton, Massachusetts, is now represented in the Middle West by James A. Kelley, formerly with Mulford, Cary & Conklin, New York, N. Y., who reports good business and satisfaction among shoe finders with his company's rubber heels.

Three employes of the Grow Tire Co., Canton Junction, Massachusetts, were painfully though not dangerously burned by an explosion in the cement room on July 14. The resulting fire was quickly extinguished without serious property damage. Two of the men were new employes, and although they had been warned of the need of caution it is believed that one of them lighted a match to find the electric switch in the cement room, which is located in an isolated brick structure.

The vogue of the English crêpe rubber sole for sport shoes is extending to America, and the Alfred Hale Rubber Co., Atlantic, Massachusetts, is putting on the market a treated crêpe sole, known as the "Rajah," for which a large demand is developing.

The light rubber shoe department of the American Rubber Co., Cambridge, Massachusetts, is closed for a short period. The rest of the factory, however, is running as usual.

Boston Notes

It has been announced that the Ninth Textile Exhibition of machinery, supplies and fabrics will be held the week of October 29 to November 3, 1923, in Mechanics' Building, by the Textile Exhibitors' Association. The National Association of Cotton Manufacturers has been invited to hold its convention in Boston during the same week, and has accepted tentatively.

The Renascence of Akron's Rubber Industry

From without and within come evidences of a new confidence in the rubber industry. This is due to the stability shown during the period of depression and the prompt recuperation from difficulties, unequalled by any other industry in the United States.

Outstanding in this chain of evidence is the oversubscription of The B. F. Goodrich Co.'s bond issue by more than $70,000,000 when offered to the public early in the month. That this issue would attract sufficient buyers to close the books the same day it was offered, was anticipated. That the subscriptions amounted to $90,000,000 when the total original offering was only $20,000,000, was a revelation. That the bond issue could have been floated easily at 6 per cent instead of 6½ per cent as offered was the general opinion following the sale which in itself shows the new opinion ruling in financial circles regarding one of the industry's greatest representatives.

The Goodrich bond sale does not stand alone as a barometer of the new financial confidence. It was rumored early during the month that one of the other large companies would be compelled to float a bond issue of several millions. It was said that bankers wanted loans due at the beginning of the coming month paid off. An investigation showed that not only had the bankers entirely altered their opinion but that they had offered the company any amount of loans up to $7,000,000 whenever wanted.

While the fact that the Anaconda Copper Co., the National Sulphur Co. and the Blake-Fitchburg Pump Co. have decided to locate in Akron means more industrial employment and larger business locally, it is more significant to the rubber industry itself. It means the investment of more than $5,000,000 in capital which comes from the financial centers of the country, and is in fact a financial endorsement of the industry.

These are some of the tangible evidences which come from without the rubber industry. That the leaders in the field have themselves felt the new confidence is evidenced by new developments in every direction some of which have been made public and others are only discussed in private.

The Goodyear Tire & Rubber Co. has announced a new series of developments, one of which is a smaller truck tire which promises to have far reaching effects in the automotive industry. The new tire is four inches smaller in diameter than the standard tire for trucks and buses. Its use will mean a radical departure from present wheel, axle and other vehicle specifications. However, the company announced the new tire with the full consent of the truck and bus manufacturers of the country.

The Goodyear company has sold for more than six years a cushion tire but it was only recently that the allweather tread design was added to the tire which will give it greater traction. The expense required to make the change is apparently justified by the increased number of trucks in operation and sold in America and foreign countries.

The Firestone Tire & Rubber Co. not only announced during the month a new cushion tire for buses and light trucks but also announced that machinery is being placed in the new steel products building which covers more than five acres of floor space and will have a capacity of 20,000 rims and 4,000 solid tire bases a day. The plant was described in THE INDIA RUBBER WORLD last year when it was completed but until the present time the company has been content to use its old building for the steel department. The new vitality pulsating through all industry and especially the automobile and truck industries showed clearly the necessity for the new plant which will increase the capacity of the company's steel business more than 25 per cent.

But experimentation and expansion is not limited to tires. New developments in the heel industry, which is now going at peak, are expected in the near future. Hundreds of thousands of dollars are being spent to develop heels and increase their market. No less than $1,000,000 is reported to be the budget of one company in Akron to develop a leather substitute, a continuation of experiments which were stopped two years ago when the depression came.

While the price and quality of tires generally is tending downwards the India Tire & Rubber Co. is frank in its statement that a new tire of higher quality and at a higher price than has ever been offered by the company, is now being developed.

These are the outstanding features of the "New Day" which the close observer cannot fail to see in Akron. On every hand are minor and less tangible facts which point to the same truth. The confident statements of the leaders regarding the future and the attitude of office and factory personnel tell a story which is even more forceful than the concrete facts which stand out in bold relief.

All this confidence is based upon facts which date back to the period of the depression and reach into the present and point to the future. The depression shook the industry. But not one company of major importance closed its door. Bank debts totalling more than $75,000,000 and inventories of raw materials running into even larger figures did not break the industry, and only one company was compelled to completely refinance and reorganize.

The rubber and automobile industries were the first to reach

high production levels, while other industries still hoped for good business. Rubber production reached over 80 per cent of normal when other industries recorded less than 50 per cent.

The number of cars registered this year and the automobile records for sales and production can leave no doubt in the minds of even the most skeptical that the future of the automobile is definitely fixed. Increased production and sale of trucks have shown that truckportation has become a reality, and the phenomenal development of bus transportation has opened a new field for the sale of tires and equipment.

Upon these solid developments has been built the sense of confidence and security upon which the rubber industry is expanding and developing towards the future.

The Rubber Trade in Ohio

Manufactured Goods

July promises to break all records since the middle of 1920 in all lines of manufactured rubber goods. The production momentum of June has been maintained for July, much to the surprise of even the most optimistic. Some let up was expected due to a probable decline in the automobile business, which likewise has not developed.

A statement issued during the latter part of July by The B. F. Goodrich Co., epitomizes the entire rubber situation in Akron.

"Tire sales are breaking all previous records. Business booked during the past sixty days far exceeds that of any sixty-day period in the history of the company.

"Cord tire sales for the first half of 1922 show an increase of 100 per cent over those of the same period last year. June tube sales have never been approached in the history of the company.

"Solid tire sales are running double the rate last year and are increasing month by month. Present volume of business is expected to continue. Sales of mechanical goods are climbing weekly and are now greater than at any time since the summer of 1920. The output of several departments now exceeds all previous records. Footwear sales are highly satisfactory.

"The company is doing a large foreign business."

Heel production is not mentioned, but the present production of heels in Akron is breaking all previous records, including those of June, which were the highest in the heel industry. The aircraft department of The Goodyear Tire & Rubber Co. is also exceeding all previous records.

Reduced prices have decreased profits, but it is doubted if the profits of the industry this year will fall below the twelve years' average established previous to the depression of 12 per cent.

It is not unlikely that early August will see some reduction in tire production. Increases are no longer being registered.

The Tire Price Situation

Tire prices moved up and down during July in the Akron district although most of the manufacturers continued to maintain lists and to meet price competition with special discounts.

The Mason Tire & Rubber Co. announced a flat reduction, effective July 15, averaging 28 per cent. The reduction was necessary, according to D. M. Mason, vice-president and general manager, to prepare for fall business by bringing prices to rock bottom and to "true tire price-lists." Mr. Mason said that special discounts should stop and that prices must be better understood by the public in order to restore confidence.

The American Rubber & Tire Co. increased prices on cords from 5 to 10 per cent. Officials of the company explained that it was done with the full cooperation of the dealers. "We placed our predicament squarely before the dealers, stating that it would be impossible to make the kind of tire we have been making for the same price. They agreed with us that the time has come to make a start in an upward movement. We have started. What the final results will be we do not yet know, but we have every reason for being confident that we will win in the move."

Meantime the manufacturers and representatives of the National Tire Dealers' Association will meet in Cleveland during the latter part of the month to discuss the ills of the tire industry. The dealers complain of the unstable character the industry has acquired through price cuts and the production of low-quality tires. While prices as a whole are not moving one way or the other discounts of all kinds are reported by dealers. Those companies which have not made cheaper tires or reduced prices continue to get business through special discounts which are carried on to the public in the same manner.

Meeting "Gyp" Tire Prices

While it was pointed out in THE INDIA RUBBER WORLD in July that tire prices are tending downward, it developed during the past month that not only have some of the larger companies decided to meet so-called "gyp" competition in this way, but have actually gone into the production of a tire which will meet the "gyp" competition on a price basis.

That it was necessary for the leaders either to make a tire which would compete on a price basis with those of the "gyps" or to permit this class of business to go entirely to the smaller manufacturers is pointed out by a leading rubber official.

The business was there. Hundreds and thousands of automobile owners wanted a tire at a low price, almost regardless of service, provided the tires lasted at least one season. The manufacturers had either to make them or let some one else do it. It was a very convenient way to convert part of their remaining raw materials rapidly into cash.

Mason Buys Owen Plant

The Mason Tire & Rubber Co., through its purchase of the plant of the Owen Tire & Rubber Co., at Bedford, Ohio, becomes the fourth largest producer of tires in the Akron district. The combined capacity of its original plant at Kent and the new plant at Bedford is very close to 7,000 tires a day.

Production has been started at the Bedford factory with an initial force of 150 men, but this will be rapidly increased until the plant is producing 2,500 tires a day. Production at the original plant has been at peak for months. Three shifts have been operated for more than three months. A large increase in dealers' orders, together with original equipment business, has made greater production necessary.

The new plant was purchased from the receiver for $275,000; the original cost is said to have been more than $1,200,000. Ford tires will be made exclusively and specialization will reduce costs. In anticipation of the new production capacity the company has already announced a new air-bag-cured oversize Ford cord to sell for $11.80.

Because of the additional tire capacity the company is planning to double the capacity of the Quitman, Georgia, fabric mill and produce cord fabric. The company now operates three fabric mills in connection with its tire factories. Sales during the first six months of this year were in excess of $5,000,000, and net profits approximately $500,000.

Ohio Notes

The Excel Rubber Co., Wadsworth, Ohio, is in operation producing men's and women's belts, although several suits rising out of receivership and reorganization have been filed against the present management and counter suits have been instituted by the company. The company was taken out of a receivership five months ago through recapitalization by the stockholders.

The Mansfield Tire & Rubber Co., Mansfield, Ohio, has enjoyed a period of prosperity since its reorganization under the present management headed by Judge Charles R. Grant, of Akron.

The company specializes in the production of tires for large wholesale and mail-order houses, and is certain of a comparatively steady flow of orders. At the present time production is in the neighborhood of 2,300 tires a day and increases may be made gradually during the next month. The plant is located on two railroads and has the advantage of a steady labor situation due to the fact that practically all its employes live in Mansfield. The product is sold under a variety of brands.

The Liberty Tire Corporation, Carey, Ohio, is reported to be building a small fabric mill to supply its tire department. Because of low production costs and a steady business the company has enjoyed prosperity during the past year and is now operating close to capacity.

Thomas J. Starkie, formerly of the Thomas J. Starkie Chemical Co., Cleveland, Ohio, is now on the staff of the Cleveland branch of the Wishnick-Tumpeer Chemical Co., importers and dealers in chemicals, oils, and colors, 365 East Illinois street, Chicago, Illinois.

Akron Notes

Fred A. Kemppel, formerly connected with the American Rubber & Tire Co., Akron, as general superintendent, will serve in the same capacity with the Lambert Tire & Rubber Co., also of Akron. The Lambert plant has been in operation night and day since January 1, while sales during the last four months are said to have shown a constant increase. The company manufactures a patented cushion tire.

The Miller Rubber Co., Akron, has recently disposed of its Akron and Canton tire service stations, these having been sold to The Instant Tire Service Co., an Ohio corporation. The new organization retains in both cities the entire fleet of service cars, and will continue the tire service offered local motorists.

The Firestone Tire & Rubber Co. announces that profits for the first eight months of the fiscal year amount to approximately $5,000,000. Reduction in profit is due primarily to reduced tire prices. The outlook for the remainder of the year is very encouraging, according to Mr. Firestone. Shipments for July continue to exceed those of June, during which 500 cars of tires, containing more than 700,000 casings were shipped.

Fire following an explosion due to static electricity practically destroyed the Washington Rubber Co. plant on Washington street, Akron, on July 19. Plans are being made to rebuild. The company made rubber specialties exclusively.

The Miller Rubber Co. reports that the bathing cap season, now practically closed, was the best experienced in two years. Dealers' orders were small for the season, however, and stocks were low, which made repeat orders larger than customary. The company has greatly increased its bathing cap and other novelty lines. In tire lines the company continues to work at peak. The first six months of the year showed a satisfactory profit, and resumption of dividend payments in September is expected.

Production of the Amazon Rubber Co. has increased to 350 tires a day and further increases will be made during the present month. The company is finding difficulty in maintaining adequate tube production, but this will be remedied in the very near future. This organization is just getting into quantity production after a long period of development following reorganization and refinancing last year. It is believed that the second quarter of the year will show the concern on a profitable production basis.

The Star Rubber Co. announces a number of additions to sales personnel. L. I. Ris, formerly with the company, has been placed in charge of the eastern sales department comprising New Jersey, Delaware, eastern Pennsylvania, New York, Virginia and New England. Arthur G. Shirk has been named assistant sales manager. C. E. Armstrong has been placed in the sales department covering the Ohio, West Virginia, western New York and western Pennsylvania territory. C. A. Reece has been placed in charge of sales promotion and publicity.

The Falor Manufacturing Co., which was founded by Shelby Falor, Akron, just one year ago, has celebrated its first anniversary by moving into the former B. & W. Rubber Co. plant at Betts' Corners. The plant is more than 250 feet long and 60 feet wide, with practically two stories of factory space. Initial production is 2,000 tubes a day, as compared with less than one-third of this number made at the former factory on East South street. Mr. Falor started on a very modest scale in the same building in which the original Miller Rubber Co. began. The aim of the company is a high quality tube. Sales are exclusively to large wholesalers and jobbers.

The syndicate which purchased the Avalon Rubber Co. plant at Barberton for $28,500 has organized as the Marlanite Co. with an authorized capitalization of $1,000,000 for the manufacture of radio telephone parts. The company will make the parts from a new product known as marlanite. Company officials claim that the new substance is cheaper than hard rubber.

Enthusiasm ran high at the first meeting of salesmen of the Swinehart Tire & Rubber Co. in Akron during the third week in July. Not only did the salesmen bring reports of better business and excellent prospects for the future, but they left a large number of real orders for immediate shipment. The plant is now running at practically full capacity with part of the factory operating three shifts a day. Sales for the year thus far exceed in value those of the corresponding period last year.

The Rubber Engineering Co., Akron, has recently increased its scope by the addition of an engineering sales department which, as well as the Akron office, will be in charge of Bruce W. Bierce. Mr. Bierce is a graduate of Akron University, is well known in athletic affairs, and has served on the "Flying Squadron" of the Goodyear organization. The Rubber Engineering Co. now has, in addition to its engineering practice, a sales department which is handling some of its own patented devices and attachments, such as airbags, rimming presses, calender knives, valve nut tighteners, etc.

The affairs of the Phoenix Rubber Co. remain subject to litigation. The report of Special Master Harry L. Snyder declaring the company bankrupt has been contested in the Federal District Court in Cleveland. The special master's report estimated the assets at $340,000, while the schedule filed by Theodore Krumreich, the president, gave the assets at $864,000 and the liabilities at $350,000. The plant is idle pending the outcome of court action. The Phoenix plant is now the only rubber plant in the Akron district idle because of bankruptcy or receivership actions.

Costs incidental to starting a new industry have made it impossible for the Seiberling Rubber Co., to meet preferred dividends due July 1. The reports current several months ago that the company anticipated a wider field of activity by the purchase of new factories are now seen to have been without foundation. Sales for the past three months indicate an annual business of between $4,000,000 and $5,000,000.

A new tire of the highest quality and to sell at top prices, is being introduced by the India Tire & Rubber Co., Akron. The sales, of course, will be limited, but the India dealers feel sure that, in spite of the demand by many for lower cost tires, the high-priced tire will continue to have a distinct place in the American automobile world. The company reports that production is at capacity following the placing of a new low-priced cord fabric tire upon the market.

In the May contest for safety first bulletins, conducted by the National Safety Council, a set of six posters designed by one of the departments of The Goodyear Tire & Rubber Co., Akron, won the first prize. The announcement is carried in the current issue of the *National Safety Bulletin*, while the posters have been reprinted and will be adopted by the council for distribution to manufacturers throughout the country.

P. W. Litchfield, vice-president and factory manager of the Goodyear company, recently sailed for Europe, accompanied by his wife, daughter and secretary.

H. W. Sherlock has been recently appointed manager of sales accounting, succeeding F. S. Nash, the latter being transferred to other duties. Mr. Sherlock has been connected with the Goodyear organization for about seven years.

The Rubber Trade in the Midwest

Midwest Rubber Manufacturers' Association

The next monthly meeting of the Midwest Rubber Manufacturers' Association will be held on August 8, 1922, at the Hotel Morrison, 79 West Madison street, Chicago, Illinois. The meetings of the Board of Directors and Executive Committee will be combined and called to order at 10:30 a. m. Tickets for the 1 p. m. luncheon may be bought the same day.

This meeting will be one of special interest as matters of importance will be discussed. John T. Christie, president of The Hawkeye Tire & Rubber Co., Des Moines, Iowa, will be present and express his views on the tire situation. Frank L. Klingensmith of the Holt Valve Co., Detroit, Michigan, and John W. Maguire, formerly vice-president of The Portage Rubber Co., Akron, Ohio, will also be present.

Members from out of town will have an opportunity to attend the Pageant of Progress which, as last year, will be held on the Municipal Pier, Chicago, from July 29 to August 14.

Midwestern Notes

The Western Vulcanizer Manufacturing Co., with general offices at 150 North Desplaines street, Chicago, Illinois, announces the removal of its factory to Plymouth, Indiana, where I. W. Clark is in charge of manufacturing. H. K. Wheelock is president of this organization whose products include "Dri-Kure" retreaders, section molds, tube plates, buffers, hand tools and vulcanizers' supplies.

Plans have been completed by The Morse Chain Co., Ithaca, N. Y., for the erection of a new branch factory building at Detroit, Michigan, the present structure having become inadequate. The new factory will contain 60,000 square feet of manufacturing space, and, according to present plans, will be ready for occupancy by October 1. The company will specialize here in the manufacture of sprockets and adjustments required for the operation of the Morse chain on the various types of engines now employing them. In line also with this increased production will be an enlargement of the engineering staff. F. C. Thompson is manager of the Detroit branch.

Executives of the Hannibal Rubber Co., Inc., Hannibal, Missouri, maker of "Mark Twain" supersize tires and tubes, announce that their plant is now operating at full capacity, with both day and night shifts, and producing 800 tires a day. The company's sales during the last two months are said to have increased over 300 per cent, while a steady demand for both cord and fabric tires continues. S. J. Roy is president of the organization; C. A. Swinehart is sales manager; while Ira A. Stowe and J. B. Austin represent, respectively, the eastern territory and Kansas and Oklahoma districts.

J. B. Linerd, who until seven months ago was prominently identified with the Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, has resigned as general manager of the tire division of the Brunswick-Balke-Collender Co., Muskegon, Michigan. He has been succeeded by J. F. Rosenberg, a nephew of B. E. Bensinger, president of the company.

The Skokie Country Club, at Glencoe, Illinois, a few miles from Chicago, held its twenty-sixth open golf championship tournament on July 10, 11, 12, 13 and 14, the affair proving a most enjoyable one. The general chairman of the tournament committees was F. E. Miller, vice-president of The Gutta Percha & Rubber Manufacturing Co., 126 Duane street, New York, N. Y. The organization maintains a branch at 301 West Randolph street, Chicago, Illinois.

Additions are now being made to the plant of the Federal Rubber Company of Illinois, Cudahy, Wisconsin, one of the divisions of The Fisk Rubber Co., Chicopee Falls, Massachusetts. The alterations at the Federal plant include the erection of a building begun a few years ago, representing about 135,000 additional square feet of floor space. When completed this building will be three stories in height, with an ultimate design for seven floors. It will be used primarily for building and curing Federal cord tires.

In line with its new policy of eliminating branches and distributing its products through warehouses, the Kelly-Springfield Tire Co., 250 West 57th street, New York, N. Y., has taken over a portion of the building at 1278 and 1282 South Pierce street, Milwaukee, Wisconsin, and will use this structure as a distributing warehouse for the state of Wisconsin.

An Expert in Mineral Rubbers

Lowell Fletcher Lindley, president of the Ohmlac Paint & Refining Co., manufacturer of hydrocarbon refiners, Chicago, Illinois, is well-known in the trade as an expert in the production and use of mineral rubbers.

Born in Richmond, Indiana, in 1869, he was educated in the Greeley, Colorado, Normal School, from which he was graduated in 1885. His first business connection was with T. W. Hobsen & Co., clothing, San Francisco, California, where he remained five years. Attracted by the rubber industry he went in 1891 to the Mechanical Rubber Co., Cleveland, Ohio, and was for ten years manager of its rubber clothing department.

In 1901 he went as superintendent of factory and sales department to the Raven Mining Co. of Utah, of which he is now secretary and general manager. In 1914 Mr. Lindley began and has since continued the distribution of asphalts for the Gulf Refining Co., and in 1906 organized the Ohmlac Paint & Refining Co., of which he is president. He is also operating director of the Usona Manufacturing Co., of Aurora, Illinois. His intimate knowledge of rubber goods manufacture, together with his experience in the production of mineral rubbers, has resulted in the preparation of hydrocarbon compounds particularly suited to the needs of the rubber trade.

Mr. Lindley lives in Chicago and is a life member of the Chicago Art Institute and of the Olympia Fields Country Club.

The Rubber Trade on the Pacific Coast

Manufactured Goods

Despite the customary drawbacks of midsummer, rubber manufacturers and dealers on the Pacific Coast are generally well pleased with trade conditions. In some lines, tires, for instance, there has been notable activity. Recent price cuts, especially on the smaller sizes, so stimulated sales that not only have the unit sales been practically double those of the same period a year ago, but the gross sales receipts have been considerably above the total for the June 15-July 15 period of 1921. Tire dealers say, however, that while the sharp cut in small sizes of casings may have been designed to kill the "gyp" dealer, it has only "scotched" him. It may curb his activities for awhile and lessen his profits but he will meet the competition with inferior firsts, acknowledged seconds, and rebuilt tires, the supply of old casings for the latter being practically unlimited.

That the days of the fabric tire are numbered is confirmed by the attitude of leading repair men on the Pacific Coast, who frankly advise customers against retreading fabric tires even of the best grade. It would not pay, they say, when new cord tires can be had for but a few dollars more. Many tire dealers

expect prices on the smaller size cords to hold their own, but that prices on the larger sizes will very likely be scaled down in the near future.

An odd development that may work out all right, although the more conservative have doubts, is the fact that so many rubber manufacturers have taken up the making of hard rubber radio equipment. The older rubber men say that many of those making radio parts are wholly inexperienced in handling hard rubber and are ill equipped for competition with old concerns. Signs are not wanting, however, of a slowing up in the demand for hard rubber radio parts, or an abatement of the radio "craze." Theatres, department stores and other concerns that have been broadcasting free concerts, etc., are intimating that the gratuitous entertainment will have to be curtailed as it does not pay.

No let up is reported in the demand for mechanical rubber goods, especially in the building trade. Big oil companies and "wild-catters" are using a great deal of rubber for pumps, for hose suction and discharge of oil, and for cementing wells by means of armored hose carrying liquid concrete under 1,200 to 1,500 pounds pressure. The copper mining industry, especially in Arizona, is becoming very active and some heavy demands are being made on the coast branches of eastern rubber manufacturers.

Los Angeles and Vicinity

The Gutta Percha & Rubber Manufacturing Co., 126-128 Duane street, New York, is marketing a large amount of oil well supplies through its southwestern selling agency of the same name at 1236 East Eighth street, Los Angeles, which is in charge of Ketchum Brothers, rubber men of long experience. General trade is reported to be much better than a year ago.

The Long-Turney Corporation is a new hard rubber manufacturing concern, with a well-equipped plant at 1920 East Vernon avenue, Los Angeles. The members of the company, all practical rubber men, are E. F. Long, George Turney, and M. MacDonald. While specializing now on radio parts, the concern is planning to take up other lines also in the near future.

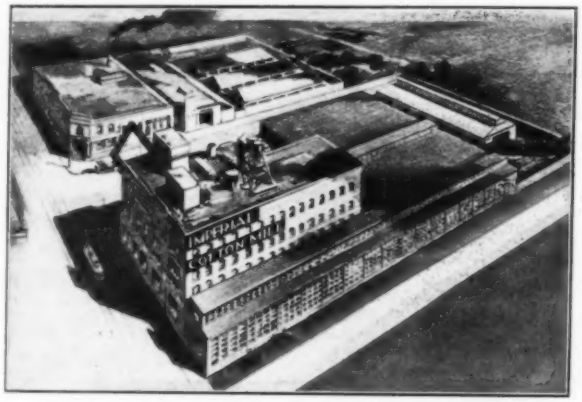
Some Los Angeles tire concerns are shipping tubes and casings for motorcycles to Mexico, where, it is said, 6,510 American cycles were bought last year. Fair sales of mechanicals, druggists' sundries, and other rubber goods are also being made in the southern republic by Los Angeles wholesale dealers and branches of eastern rubber mills. Good prices are said to be obtained, and nearly all transactions are strictly for cash. Shipments are made through brokers in El Paso and Juarez who insure delivery to points of consignment, inasmuch as the American express companies can not accept packages to be sent over the Mexican national railways.

With practically no interruption of work in tire fabricating, the new $200,000 addition to the Samson Tire & Rubber Co., at Compton, a suburb of Los Angeles, is almost ready for full occupancy. The concern gains 34,000 square feet additional floor space and room for a new calender, mixing mills, and additional power plant, besides a number of tire building machines, all the most up-to-date equipment. Production will soon be increased from 350 to 1,000 cords and from 200 to 500 fabrics a day.

Midsummer production of The Goodyear Tire & Rubber Co. of California at the Los Angeles plant is not far away from the peak, the "ticket" for mid-July being 3,500 casings and 3,800 tubes. A strong feature is said to be the new Goodyear 30 by 3½ rib cord. A. F. Osterloh, general manager, who recently returned from a trip to the Hawaiian Islands, has been in conference with the heads of the parent Goodyear concern in Akron lately.

The Coast Tire Sales Co., 624 Pacific Mutual Building, Los Angeles, California, is a recent incorporation, capitalized at $500,000 to operate a chain of stores for the sale of automobile tires and tubes and other accessories. A specialty is made of tires and tubes produced by the Coast Tire & Rubber Co., of Oakland, California. The officers of the organization are as follows: J. R. Thaman, president; N. J. Whelan, vice president; and I. M. McPheron, secretary-treasurer. Directors include: Holmes Ives, A. W. Shepherd, and C. E. Eldridge.

The proposed establishment of the Imperial Cotton Mills at Los Angeles, California, is in accordance with the demands of growers and consumers of that vicinity, who claim that Los Angeles is the recognized cotton center of the Pacific Coast. It is believed that the new plant, which will specialize in the production of ducks, denims, drills and osnaburgs, has an especial advantage in freight differentials, inexpensive power and excellent living conditions, as well as a proximity to the Imperial Valley and Arizona producing regions. Offices of the company are at 816-820 Loew's State Building, Los Angeles, California, and executives include: F. M. Douglass, president and treasurer; S. L. Deare, vice president in charge of production; W. L. Williams, vice president in charge of sales; Glenn B. Chadwick, secretary; and J. H. Ramboz, treasurer.



Imperial Cotton Mills, Los Angeles, California

San Francisco and Vicinity

The William C. Smith Rubber Co., jobber in rubber goods, has removed from Spokane, Washington, to 682-684 Mission street, San Francisco, California.

J. B. Lippincott, manager of the San Francisco branch of the Boston Woven Hose & Rubber Co., Cambridge, Massachusetts, finds business this summer well above the average, and the outlook very encouraging. An increasing demand is reported for ⅝-inch garden hose, one of the company's specialties, and well distributed sales of various mechanical goods.

The San Francisco branch of The Spreckels "Savage" Tire Co., reports that sales of cords are running about 300 per cent over the sales of a year ago, and that the outlook is most encouraging.

Howard F. Smith, assistant sales manager of The General Tire and Rubber Co., Akron, Ohio, has been making a study of trade conditions in the Pacific Coast territory.

General Manager Brady of the Coast branch of the United States Rubber Co. reports business well above that of a year ago, and the outlook as most encouraging. He is particularly pleased with the success of the United States Royal Cord tires, sales of which for the six months of 1922 being double those of the same period in 1921.

A contract has been awarded for the construction of a new plant at Selma, California, for the Fresno Tire & Rubber Co., Mattei Building, Fresno, California. The first unit will be a building 60 by 250 feet, three stories in height, costing approximately $126,000, while the new machinery is estimated at $150,000.

J. H. Christian, president and general manager, is anticipating having tires ready for delivery by December.

Northwestern Notes

Oregon

Plans for a total investment of a quarter of a million dollars in a new plant, now in course of erection, are announced by the Columbia Tire Corporation, Northwestern Bank Building, Portland, Oregon. It is expected that the buildings will be completed in the late fall, and that the production will be 500 tires and tubes daily. Executives of this organization include: R. A. Wurzburg, president; Alfred A. Aya, vice president; Lewis Wyman, treasurer; and K. C. Mohrhardt, secretary.

An organization previously known as Wiedmaier & Sons has recently formed a merger under the name of the Amalgamated Tire & Supply Co., with offices at 104 Thirteenth street, Portland, Oregon. The concern specializes in "Andover" tires.

W. L. Bartlett, for the past five years president and general manager of the Perfection Tire Co., who brought the first Perfection tire to the Pacific Coast in 1917, when he made his headquarters in Portland, Oregon, has resigned to enter other lines of business. Mr. Bartlett built up one of the largest retail tire businesses on the coast, with a chain of stores extending from Spokane to San Diego.

The Columbia Tire Corporation factory at Kenton, a suburb of Portland, Oregon, will be ready for production within two months, according to R. A. Wurzburg, president. The main mill will have two stories, 80 by 350 feet, affording 42,000 square feet. It will be of concrete, fireproof, and cost $80,000. The up-to-date equipment will bring the total outlay to nearly $250,000. The capacity will be 500 tires and 500 tubes a day, and 250 men will be employed.

Southwestern Notes

Sir James P. Reynolds, head of the Liverpool firm of Reynolds & Gibson, recently made a close study of the southwest cotton situation. This section, he declared, is likely to develop into the heaviest producing part of the cotton belt. The Raynolds & Gibson firm was the first to introduce Pima cotton into the Lancashire spinning industry, although, as Sir James says, Pima sales have fallen off lately in the British market for tire and similar fabrics because of a slackened demand for high-class goods. Pima's place is being largely taken by Tocar, Sakellaridis, an Egyptian cotton, and Pima put into competition with the choicest Egyptian Sak in the making of high class yarns, in which it suffers by comparison, chiefly, as Sir James puts it, because of carelessness in picking and ginning the southwestern product. The best Pima, he said, was found near Bakersfield in the San Joaquin Valley and the best white cotton is Acala, of which a large amount is being grown in Imperial Valley, California.

Apprehension regarding the supply of Arizona cotton available for tire fabrics is allayed by a recent report from Phoenix, the center of the cotton raising industry. It is stated, the 1922 crop will be fully up to 85 per cent of normal, instead of but 75 per cent as forecasted earlier in the season, and the yield will be more than half a bale to the acre. As for picking, there is no anxiety on that score, as ample Mexican labor is available. The price of long staple has been holding up well, owing to strong demand, first grade stock easily bringing over 40 cents a pound. At the beginning of the season 140,000 bales were on sale in Salt River Valley, but only a few thousand now remain unsold.

Pima raisers express much disappointment at the decision of the United States Senate to keep the import duty on long staple cotton at 7 cents a pound, instead of raising it to 15 cents. Arizona growers say that they are placed at a great disadvantage in trying to compete with the Egyptian staple raised at a low cost in the valley of the Nile and brought in American ships to New England at a very low freight rate.

The Rubber Trade in Canada

Firestone Will Open Canadian Plant

Operations at the new Canadian plant of the Firestone Tire & Rubber Co., Hamilton, Ontario, will begin September 15. The main building, five stories in height, and of fireproof construction, is already completed, and machinery and other equipment is being installed. The plant capacity is at present 1,500 tires daily, while

Firestone Tire & Rubber Co.'s Canadian Plant

plans are being considered for the production also of a full line of rubber goods, including belting, hose, and possibly boots and shoes.

The company is now represented in every province in Canada, and at the present time over 2,200 dealers are handling its products. As Canadian manufacturers have preferential duties, the Firestone organization is looking forward also to a large export trade.

Experiments of Rubber Roadways, Limited

In the report for the calendar year 1921, Rubber Roadways, Limited, London, England, makes some interesting suggestions and states results of experiments which appear to have great possibilities. Sections of roadways in Borough High street, Southwark, where improved rubber blocks were vulcanized on an expanded metal plate, are said to continue to give excellent results, although the roadway has been in constant use for about 18 months. The use of rubber treads on stairways of public buildings is proving satisfactory, as well as rubber paving on railway platforms. At the Euston Station, London, of the London & North Western Railway, rubber tiles, ½-inch thick, were installed, in suitable squares measuring from 18 to 24 inches, and containing over 40 per cent of pure rubber. These tiles were specially backed to prevent "creeping" or "spreading."

At the International Rubber Exhibition, held in June of last year, some interesting types of rubber blocks were displayed, including rubber capped wood blocks, rubber and concrete blocks, rubber and metal plate blocks, and rubber with expanded metal blocks.

DENMARK'S RUBBER IMPORTS FROM UNITED STATES

Exports from the United States to Denmark of automobile tires had a total value of $279,370 in 1921, as compared with $16,611 in 1913. Our total exports of rubber manufactures to this country for the calendar year 1921, also reached a value of $433,310, as compared with $75,338 as estimated for the fiscal year ended June 30, 1913. There is little manufacturing of rubber goods in Denmark, there being in 1920 only three plants in operation, the most important of these, De Forenede Gummi & Luftringefabrikker, at Copenhagen, producing tires for motor cars and bicycles, as well as a general line of rubber goods. The amount of crude rubber imported by Denmark in 1921 is estimated as 2,582 kilos.[1]

[1]One kilo equals 2.2 pounds.

The Rubber Industry in Great Britain

By Our Regular Correspondent

Rubber Production

Now that the Churchill Committee has made its report favoring a restriction scheme based upon a graduated scale of export duties, interest centers upon the position which the Dutch will adopt. It is asserted that there is a growing majority in England which favors restriction under some form of government regulation, but it is agreed that action without Dutch cooperation would be undesirable if indeed not futile.

The International Association, the Dutch counterpart of the Rubber Growers' Association, has held its meeting, and the Dutch growers, by a substantial majority, agreed to seek government assistance and a committee was appointed to prepare a plan for submission to the government. Although restriction of output will certainly be one of the remedial measures proposed, other proposals will also be put forward. At the moment then the rise in the price of the commodity and the demand for plantation shares which took place on the first telegraphed announcement appear to be somewhat premature.

It is said that in Malaya opinion is in favor of proceeding, leaving the Dutch out of account, which seems rather a curious position to adopt, seeing that up to the present voluntary—that is, in effect, partial—restrictive measures have all failed to produce the desired result. The difficulty our government is up against is the complaint of Free Traders that a policy of restriction, while improving the position of the producers, is in effect the creation of a monopoly with the consequence of a higher price to consumers.

The Rubber Goods Situation

With regard to rubber manufacturing, there is nothing in the way of a spurt to record. The proofing branch continues dull and the large imports of foreign tires are causing much concern to home producers. Here, of course, the government is on the horns of a dilemma, as it is impossible to satisfy both the manufacturers and the consumers who want to buy in the cheapest and what some consider the best market. One good feature in the situation is the end of the long-protracted engineers' strike, but the undoubted revival in the cotton trade is offset by the rise in the price of cotton, which has led to increased production for yarns.

Applied Chemistry Reports

In the annual volume for 1921 published by the Society of Chemical Industry, the chapter on rubber is written by B. D. Porritt, whose predecessors in this task were Dr. Stevens and Dr. Twiss. Mr. Porritt writes in an interesting manner upon the occurrences and developments of the year, the subject matter being naturally of more novelty to those outside the trade than to those who do their best to keep up to date by perusing their weekly or monthly trade journals. In the case of the manufacturers, he says, the low price of rubber has proved insufficient to compensate for other difficulties, particularly the remarkable fluctuations in the price of cotton, the prejudicial effect on home and export demands resulting from trade depression and abnormal rates of exchange. Referring to the use of latex in paper manufacture, he says it recalls some of the earlier experiments of Goodyear and Hancock and would seem to have most prospect of success in tropical countries where fiber and latex are side by side.

An American Chalk Deposit

America seems big enough on the map to contain all the known minerals in more or less abundance, but it is a fact that many which are common in smaller countries are found only sparsely distributed in the States. Two minerals, flints or chalcedonic silica used in pottery manufacture, and cliffstone whiting, have for a long time been exported largely from Dieppe, France, to America, where flints are absent and chalk, known in the rubber trade as whiting, is scarce. It is interesting to read in THE INDIA RUBBER WORLD of May 1, 1922, that a good grade of chalk comprising over 2,900 acres has been located at White Cliffs, Arkansas, and is being worked by the Kriffendorf-Tuttle White Cliffs Products Co., machinery of the most modern type having been installed. This news may not be too welcome to our exporters, of whom there are several in England—the Dieppe chalk being worked and exported by a British firm. We must wait for results, however, and not forget that despite the imposition of tariffs other British minerals have continued to go to America owing to our production costs being lower.

Vulcanized Fiber

An important inquiry under the Safeguarding of Industries Act has been held and adjourned with regard to the importation of vulcanized fiber from America, it being asserted that the British manufacture and output is becoming seriously affected by the low prices at which the American products are sold here, these prices, it is contended, being under the cost of production. Although the case is fought by the British Electrical and Allied Manufacturers Association, there is really only one firm of any magnitude in this country engaged in vulcanized fiber manufacture, that of Messrs. Sutcliffe, of Crumpsall, Manchester, and the inquiry is really being held on their account.

American competition was said to be strangling the home industry. It was mentioned that overtures on several occasions have been made to J. A. Sutcliffe by or on behalf of the United States makers to get him to join with them in controlling prices for the English market. The English factory was started in 1904 and the output in 1919 was 1,100 tons, the highest yet attained.

It was stated that unless protection is afforded against the present American dumping the manufacture will have to cease. It appears that there is no other fully equipped factory in Europe, though the Germans are credited with the intention of starting, of course under the ægis of protective duties. It is the great variation in the American prices which has proved so upsetting and Mr. Sutcliffe said that if the present mean price of 1*s.* 7*d.* per pound was consistent he would have no complaint to make. The inquiry was adjourned to a later date when evidence collected in America will be brought forward.

The Next Rubber Exhibition

The Sixth International Exhibition of Rubber, Other Tropical Products and Allied Industries will not take place in London, but in Brussels, Belgium, in 1924, at the same time and in the same place as the Fifth Commercial Fair of Belgium. Seeing that the Exhibition, though promoted by England, is an international undertaking, this seems quite a good arrangement, although of course not the most convenient one for British exhibitors and intending visitors. Sir Owen Phillips, the shipping magnate, will continue as president, supported by Professor Dunstan, Sir Ernest Birch and others who were prominent at the London exhibition of last year. The organizing director will as before be H. Greville Montgomery, of *The Rubber Age*, the control and management being in the same hands as in 1921. There seems no reason why the Exhibition should not achieve the success of its predecessors, though two years seems rather a long time ahead to make definite

arrangements in these days of general political unrest on the Continent.

The Honors List

The King's birthday list this year, though a somewhat lengthy one, contains only one name of interest to the rubber trade. This is George Sutton, who becomes a baronet. It was in 1881 that he became secretary of W. T. Henley's Telegraph Works, Limited, and promotion was rapid, for in the following year he became general manager on the death of W. T. Henley, the founder of the business. Under his control the manufacture and laying of cables in various parts of the world was carried out successfully. Rubber insulated cables were soon afterwards made, a rubber manufacturing plant being installed at the North Woolwich Works. At a subsequent date an additional factory was established at Gravesend for paper insulated cables and accessories. The next development was the starting about ten years ago of a motor tire factory at Gravesend, known as the Henley Tyre & Rubber Co., Limited, where also the well-known "Why Not" golf ball is made.

Rubber Company Notes

The New Turco Rubber Co., Limited, which has been established for some years in Manchester, formerly a subsidiary of the Leyland & Birmingham Rubber Co., Limited, has now removed to the Ribble Bank Mills, Preston, Lancashire. The works director is A. Hawkins, late of the Silvertown company and Wood-Milne, Limited, while the sales director is E. S. Seymour, late of Glover's and the St. Helens Cable & Rubber Co., Limited. In addition to cycling requisites the company will specialize in compounds and tapes for the electric and other industries.

There has been some delay in the sale of the United Rubber Products Co., Limited, a Manchester concern in voluntary liquidation to George Spencer, of the Monarch Rubber Co., Limited, but all is now arranged satisfactorily and work will shortly be proceeding under the new proprietorship.

The British Recovered Rubber Co., Limited, Manchester, engaged in rubber reclaiming since its formation in 1877, has enlarged its title to the British Rubber & Chemical Co., Limited, as it has extended the scope of its activities by supplying all classes of compounds and chemicals for the rubber trade.

The announcement by the directors of Vickers Limited that a 5 per cent dividend would be paid for 1921 on the ordinary shares was somewhat unexpected and was therefore a source of gratification to shareholders. This large concern includes in its subsidiaries the cable firm of W. T. Glover & Co., Limited, and the rubber manufacturing firm of Ioco Co., Limited, of Glasgow, Scotland. No dividend was paid on the ordinary shares for 1920, though the large credit balance of £991,000 was carried over.

The Rubber Trade in Europe

By Our Regular Correspondent

France

The Etablissements Hutchinson have proposed a dividend of 75 francs compared with 50 francs for the preceding year.

The Compagnie Générale des Câbles de Lyon reports a profit of 842,000 francs during 1921 compared with 804,619 francs in 1920. A dividend of 10 per cent or 50 francs per share will be distributed.

During 1921 Etablissements Bognier & Burnet made a net profit of 1,335,097.92 francs. The dividend has been fixed at 20 francs per share. The capital of 1,400,000 francs will be increased to 2,200,000 francs.

Scandinavia

Two new cable factories have just been started in Sweden. One is the Aktiebolaget Helsingborgs Nya Kabelverk, Helsingborg. The other is Kabelfabriken Star, Svante Larsson at Vaggeryd.

The A.-S. Nordiske Kabel-og Traadfabriker wire and cable factory at Copenhagen for the first time reports decreased business. The sales turnover fell from 41,700,000 to 19,100,000 kroner. During the year an average of 1,200 persons were employed against 1,500 during the previous year. With a gross profit of 7,800,000 kroner the loss amounted to 431,519 kroner.

Austria

The Austrian branch of the Vereinigate Gummiwarenfabriken Harburg-Wien located at Wimpassing is to be reorganized owing to the low rate of the Austrian krone and the exchange difficulties connected therewith. A new joint stock company will be formed through the Wiener Bankverein and the concern is to be financed with Austrian capital.

Belgium

The amount of rubber imported from the Belgian Congo by Belgium during 1921 was 640 tons, valued at 1,920,000 francs. In 1920 the totals were 1,883 tons, value 10,661,000 francs, and in 1919 there were 1,203 tons, value 7,000,000 francs.

Germany

Economic Conditions

The tension in economic conditions is still further heightened by the attitude of the radical masses. Labor has never been so well off as at present, but the condition of the capitalists is not so rosy. The manufacturing world is suffering from reduced output capacity. The high sales figures are deceptive and this is shown when the average value and weight of sales in different years are put side by side. Thus the average of figures from a number of the larger concerns shows that if the relative weight and value of sales before the war is taken at 100 the figures for 1915 are 48 and 50, respectively; for 1917, 108 and 132, respectively; but thereafter the figures for weight decrease and those for value increase until in 1921 the former is only 53 while the latter has risen to 1,121.

These figures are borne out and explained by the comparative figures of the number of laborers, number of work days and average output in weight per man and per day. Thus in 1915, the number of workers was 86 per cent, the number of days per man 82, and the output per man per day 58 per cent. In 1917 these figures became 85, 65, and 164, respectively; while in 1921 the number of workers, though still 85 per cent, but with an average number of working days amounting to 77 per cent, produced only 62 per cent per man and per day as compared with prewar days.

On the other hand, a consideration of wages shows that in 1915 the actual wages were 102 per cent per man and per day and 167 per cent per kilo of the finished goods as compared with earnings before the war. In 1917 the figures were 107 and 64, respectively. But by 1921 the average daily wage per man was 895 per cent, which works out at 1,449 per cent on each kilo of finished goods.

Costs and sales proceeds for the manufacturer work out as follows:

For 1915 the prices of raw materials were found to be 82 per cent; price of coal, 118 per cent; commercial overhead, 83 per cent; proceeds from sales, 105 per cent. In 1917 raw materials went up to 86 per cent, coal to 180 per cent, overhead 117, and proceeds 123 per cent; and in 1921 raw materials cost 2,650 per cent, coals 1,667 per cent, overhead 432 per cent and proceeds were 2,351 per cent as against costs and proceeds in peace time.

Of course the above figures apply to only a section of the German industries, but it is believed that it is not an exaggerated sample of the whole.

Removing Odor from Rubber

What is known as the rubber odor, says the *Gummi-Zeitung*, can be removed after an article is finished, but the odor caused by the fillers is more obstinate. Goods in which factice has been used have a much stronger odor than those made without it, and the smell remains even after vulcanization.

The real rubber smell, however, can be removed by treatment with bone or animal charcoal, the articles being placed in a tin case on a layer of powdered bone charcoal, three centimeters (a little more than an inch thick) and covered with an equal amount of this powder. Then another layer of goods is placed on the powder and again covered until the box is full. The top layer consists of the powder. When filled, the case is put into a double-jacketed kettle and left there from 6 to 8 hours in a temperature up to 100 degrees according to the capacity of the box. The charcoal will absorb the rubber odor. Treated articles should not be kept near untreated ones as the former would take over the smell from the latter. The powder should be used once only. Instead of the charcoal, unburned magnesia may be used.

Stickiness of Manihot Rubber

The *Tropenpflanzer* publishes an article by Th. Marx and A. Zimmermann on the causes of stickiness in Manihot rubber, stating that dry Manihot rubber gets sticky after one or more days if it is exposed to direct sunlight. Rubber coagulated with a mixture of mwengere juice and chloride of calcium becomes sticky quickest. Freshly coagulated wet rubber may be exposed to direct sunlight for several hours without becoming sticky immediately after being dry. Heat has the same influence on dry rubber as direct sunlight. Wet as well as dry rubber does not become sticky under mechanical treatment when this does not take place with much heating.

Sand and red clay cause stickiness, as well as iron and copper combinations. No connection could be shown between putrescence and stickiness. Remains of former tappings collected with fresh rubber and distinguishable by their dark color are often sticky but do not communicate the stickiness to the fresh rubber.

The brown lac-like exudations which appear during the drying of rubber that has not been mixed with water, have nothing to do with the stickiness of rubber. It has further been found that stickiness is not communicated to sound rubber.

Colloid-Chemical Association

It is intended to form a Colloid-Chemical Association and about forty representatives of scientific and technical colloid-chemistry have signed a convocation. The establishment of this association is to take place about the time of the celebration of the centenary of the Gesellschaft Deutscher Naturforscher und Aertzte in Leipzig. Requests for information are to be addressed to Professor Wolfgang Ostwald, Brandvorwerk-strasse 77, or to the *Kolloid-Zeitschrift*, Leipzig.

New Goods

The Gummiwarenfabrik Curt Schellbach, Seiferitz-Meerane, Saxony, has put on the market a barking dog which consists of a dog's head on a ball; when squeezed, the toy emits realistic barks. The newest is a figure of a pretty little girl holding a doll in her arms. From the waist down the figure takes the shape of a knobby ball. This, too, produces sounds when squeezed. The firm is also producing rubber gas tubes striped in gay colors, yellow, green, blue, red, black or white.

J. Th. Schönig of Frankfort-on-the-Main, has patented a new kind of rubber heel named "Vulcanit." The heel is interchangeable, and is attached to the shoe without gumming or nailing. It has conical knobs which fit into corresponding depressions in an aluminium plate that is nailed to the shoe heel. As the heel can easily be changed from right to left and vice versa, all parts are worn evenly.

German Joint Stock Companies

A review of German joint stock companies shows that during 1918-1919 there were 27 such concerns in the rubber and gutta percha industries, having a paid up capital of 67,843,000 marks and real reserves of 39,966,000 marks. Of these companies, 22 showed a net profit of 20,188,000 marks and five suffered a loss of 2,194,000 marks. The profit for the year, after carrying forward the profit and loss account of the previous year, was 15,311,000 marks for the 27 concerns. Of these again, 20 paid altogether 10,993,000 marks or 16.2 per cent in dividends, while seven companies with a capital of 9,125,000 marks paid no dividends at all.

E. DE HAEN—IMPORTANT GERMAN CHEMICAL INDUSTRY

Organized in 1861 for the purpose of manufacturing inorganic chemicals for pharmaceutical and technical uses, the establishment known as E. de Haen Chemische Fabrik "List" G. m. b. H., near Hanover, Germany, has steadily grown until today it represents one of Germany's important industries. In 1902 the factories were transferred to Seelze, about seven miles from Hanover, the site occupied covering 125 acres, of which about 50 acres are now used for factories and warehouses. Necessary power is generated at the plant, which also has its own railroad sidings and connections.

Chemical Plant of E. de Haën, near Hanover, Germany

Aside from seven factory laboratories and a control laboratory, a scientific laboratory and library are also maintained. The plant produces acids and raw chemicals, and specializes in research work.

The founder of the firm, Dr. E. de Haen, was able to celebrate, in 1911, the fiftieth anniversary of the organization of his factory, while after his death, a few years later, the sole management of the concern passed to his son, Dr. W. de Haen. In the United States the E. de Haen Chemische Fabrik "List" G. m. b. H. has been represented for a number of years by Pfaltz & Bauer, Inc., 300 Pearl street, New York, N. Y.

"CRUDE RUBBER AND COMPOUNDING INGREDIENTS" by Henry C. Pearson, should be in the library of every progressive rubber man. "Rubber Machinery," by the same author, is equally authoritative in its line.

The Rubber Trade in the Far East

By Our Own Correspondent

Malaya

RUBBER is down around 24 (Straits) cents a pound, not much above the prices quoted last June, the most critical period of the rubber slump. Producers are wondering what has happened to the deliberations of the Churchill committee, and have even suggested that the committee is dawdling over the matter, but the committee denies the charge; the solution of Malaya's rubber problem is no easy affair, it declares. And so it would seem.

Here in Malaya public opinion is divided on the subject of restriction and this has been brought out emphatically by recent occurrences.

It will be remembered that for some time past attempts were being made to get the Dutch to join a scheme for compulsory restriction. It seems that the Dutch have declined with thanks. Accordingly, pro-restrictionists hastily assembled and decided that a cable should be sent to the Churchill committee urging immediate compulsory restriction whether the Dutch cooperated or not, as the local financial conditions bordered on disaster.

The committee of the Selangor and Negri Sembilan Branches of the Federated Malay States Chamber of Commerce were unanimously in favor of sending the cable. But the Perak Branch was just as unanimously against it and expressed the opinion that the former were panic-stricken and that if restrictions were introduced, the last state of the rubber industry would be worse than the present. This opinion seems to be backed by those who feel that they are strong enough to weather the situation and those fortunate concerns, European as well as Chinese, who continue to make a small profit even when rubber is as low as 8*d*. per pound.

The confidence of these latter is in marked contrast to the attitude of what we might term the more rabid restrictionists, whose spokesman, it would appear, is the *Straits Times*. This generally common-sense paper has of late allowed itself, in panic presumably, to resort to most immoderate language on the delicate matter of restriction and more especially on the subject of the Dutch.

The Rubber Growers' Association is roundly trounced for its manifold follies and the Dutch are served with all sorts of threats of cut-throat competition and paying them back in their own coin next time. The paper in question is fully convinced that Malaya can successfully carry out a drastic policy of restriction even if Java and Ceylon keep aloof.

Java evidently does not see why it should increase its losses by restriction when it has succeeded in evening up its balance to a certain extent through profits derived from the crops. Possibly, too, Java feels that the rubber industry will not continue on its present basis but is due to undergo certain radical changes caused perhaps by greatly increased yields, the result of new methods, say bud-grafting, for example.

Ceylon

The Rubber Situation

The Churchill rubber committee in its report states that the only alternative to the evils of compulsory restriction of output is the imposition of export duties to reduce the production of rubber to the level of consumption. More drastic restriction is considered very necessary. Of two schemes—one providing for legislation prohibiting production and export above a certain percentage, and the other involving a graduated scale of export duties with low duties for export within the permitted percentage and prohibitive duties beyond that—the second is preferred. This latter scheme also provides for a permanent export duty of a penny a pound irrespective of the price of the rubber and taking the place of the ad valorem duty now leviable.

The production standard allowable during the first year should be fixed at 60 per cent, insuring a substantial reduction of stocks. When the price of rubber has reached 1*s*. 3*d*. and remains at that figure for three months, the percentage of production would automatically be raised 5 per cent for the ensuing quarter, and at the end of every quarter similar adjustment upwards or downwards would be made, the percentage not falling below 60.

Production Costs

A correspondent of a Ceylon paper states that published figures of 45 local rubber companies show an estimated output for 1922 of 10,802,000 pounds, while for 1921 these concerns produced 9,288,000 pounds, showing an estimated increase of 1,514,000 pounds, or 16 per cent above the previous year's output.

The average estimated cost of production of 28 companies is 30 cents per pound. The other 17 give no figures for costs. The average price obtained for rubber sold last year was about 50 rupee cents per pound, Colombo, and for the current year may be estimated at 45 cents. The lowest estimated cost is 23 cents per pound and the highest 36.64 cents. The greatest profit, therefore, would work out at 3½*d*. per pound and the lowest at 1⅓*d*.

Ceylon Rubber Factory

The Ceylon hydroelectric scheme is calling forth much discussion and one of the questions asked is how to absorb the entire power output. Among various suggestions is this that the electric energy could be used in the manufacture of rubber goods.

It is said that a factory will shortly be established by the Mayo Rubber Sole Factory Co., Limited, with the purpose of making rubber articles, chiefly sandals and shoe soles and heels.

The authorized capital of the concern is 400,000 rupees of which 80,000 rupees has been reserved for equipment. As soon as the new factory is in working order an advertising campaign will be launched all over the world and rubber stores will be opened in all the chief trade centers. The normal value of a rupee is $0.324.

Netherlands East Indies

De Vries Reports on Rubber Preparation

The *Archief voor de Rubbercultuur* of May, 1922, publishes a lengthy lecture by Dr. O. de Vries before the Netherlands East Indies Rubber Association, Batavia. Dr. de Vries has just returned from a tour of America and Europe and gives his experience of the demands of manufacturers, dealers and producers.

To begin with, manufacturers continue to use types of rubber other than plantation; the latter does not yet come up to their ideal for the finest rubber products. Plantation rubber is too variable, too hard and requires too much energy and work to make it plastic. The ideal rubber, according to manufacturers, would be as soft and easy to work as Caucho ball or some Congo grades, but would have all the good qualities of hard fine Pará after vulcanization.

Splinters in Plantation Rubber

Methods of packing are also criticized by manufacturers. Poor packing causes dirt and splinters to penetrate the rubber and while this is no drawback for certain kinds of goods, it entails re-washing for the finer qualities, and such rubber cannot be used at all for the finest products. Then for the best kinds of rubber cement and solutions hard fine Pará must be used; plantation crêpe is unfit for the purpose and smoked sheet only in some cases.

Dr. de Vries finds that thin pale crêpe is needed for probably

5 to 10 per cent of the total rubber requirements. In most cases it is bought in preference to smoked sheet for the reason that the former is more constant than the latter. In many cases where crêpe is used, the Ceylon blanket crêpe would do just as well.

Dealers' Demands

Now as to the demands of dealers. They, too, want a uniform and constant article. At present plantation rubber is too susceptible to attacks. Producers do not yet know how to prepare and smoke sheet in order to prevent moldiness; nor do they know what to do with crêpe to exclude all possibility of the development of moisture stains when cases or packages get damp during transportation. At present so much trouble is caused by dampness that in Amsterdam it has again become necessary to open all cases for sampling instead of only 10 per cent as had been the practice.

Producers' Complaints

The chief complaints of the producers are: first, that dealers demand too much of the outward appearance of rubber, which is really of little importance to the manufacturer while it places an extra burden on producers; second, that appraisal on the market is changeable and unscientific.

With regard to the first point, Dr. de Vries is of opinion that the standard quality should be placed lower so as to include rubber having some slight external defect which, however, does not affect the high quality. For most rubber articles this grade would be useful, while for special purposes requiring the very best a super quality could be developed.

Singapore Blanket Crêpe

A simpler method of preparation and a more robust type of rubber are very necessary. For example, the so-called Singapore blanket crêpes. These are made in a few European and many Chinese factories from all sorts of odds and ends including smoked and unsmoked sheets, biscuits and scraps brought in by the natives and small Chinese planters, as well as waste and rejected parcels from European estates. They come in six grades, ranging from light amber to pitch black tacky and barky thick crêpes. These crêpes find a good market in America where they are often preferred to the thin brown estate crêpes because they are so much more uniform than the latter.

A New Method

From this it would seem that in the future a new method of preparation would come into vogue. The rubber would be coagulated according to very primitive methods on the estates and then prepared in central factories where the work on a big scale with a mixture of all kinds of rubber would result in a cheap blanket, uniform both as to appearance and quality. Because of the scale on which this work would be carried out, it would pay to have expert technical supervision and the product could be guaranteed.

Grading Standard Rubber

With regard to judgment, Dr. de Vries thinks that the rubber should be divided into the following three classes when grading for standard quality:

1. External defects or deviations which are absolutely harmless and arise from no illegitimate causes.
2. Defects which do not spoil the rubber.
3. Defects which cause a degeneration in quality.

Under the first head would come irregularity in the pattern of sheets, little holes in crêpe, and the like. Then different degrees of smoking, air bubbles, the yellower color of crêpe caused by alternate daily tapping, and rustiness of sheets. No real objection could be made to these defects and they should be admitted under standard grades.

The second head includes moisture stains in crêpe, surface mold in sheet, lumps in crêpe and oxidation stains in sheet and crêpe, and the like. For most purposes this rubber is just as useful as a perfect product, and if the standard were lowered (while at the same time a super quality was created for the very finest goods), this kind of rubber could be admitted under standard grade.

The third head embraces the more serious cases of mold moisture stains, tackiness and similar defects which cause a deterioration of the quality of the rubber. This rubber would have to go with inferior grades.

Netherland Indies Notes

In its annual report the Netherlands East Indies Agricultural Syndicate remarks that, during 1921, Java planters on the whole were able to make both ends meet but in many cases it was possible only by the most drastic economies. Very few estates were closed down or sold.

The only noteworthy change was that planters went from a system of daily tapping to one of alternate daily tapping. In some cases longer periods of rest between tapping were allowed. There was a marked decrease in production which, however, was not chiefly due to restriction but to the lower yields of the older plantations.

The syndicate on the whole has been against compulsory restriction. It is admitted that voluntary restriction would probably have a favorable effect on the price of rubber, but, on the other hand, if there were not such an increase in consumption as to insure the taking up of the normal yield in a reasonably short time, restriction would be of no benefit to the industry.

A New Inner Tube

A new inner tube said to combine all the good qualities of existing tubes has been invented by Mr. Heymerings of Soerabaya. The enterprise will be known as the Western Tire & Rubber Co. and will be located at Bagong.

In the Far East two kinds of tubes are used at present, the gray tube and the red tube. The former is perfectly air-tight but owing to the tropical heat has a tendency to stick to the cover. The red tube does not stick but is often porous and soon bursts. The new tube consists of a red tube over a gray one, thus combining the non-sticking qualities of the first with the airtightness of the latter.

Java's Tire Consumption

As regards the consumption of tires in Java, it is interesting to learn that during the last three years the average yearly imports were 223,000 automobile tires; for the last two years the average was over 224,000 tires. The average yearly imports of bicycle tires for the last two years numbered around 494,000. Including technical rubber goods, the value of the annual imports of rubber articles may be figured at more than 20,000,000 gilders. A gilder equals $0.40.

A Valorization Scheme

J. N. Burger has sent the members of the International Rubber Growers' Association in the Netherlands East Indies a plan for improving the rubber situation. Briefly it is this:

Since it is agreed that the surplus stocks amount to about 100,000 tons and that the rubber market would improve if this surplus was removed, the formation of a stock of 100,000 tons is suggested.

To make up this quantity, producers and dealers in rubber would contribute certain amounts of first latex crêpe. This stock would be renewed by producers and owners at least once a year. The stock is not to be sold until prices have risen to, say, a gilder per one-half kilo, when only 20 per cent would be put on the market. As soon as prices showed a tendency to drop, the full quantity of 100,000 tons would be made up again.

Recent Patents Relating to Rubber

The United States

Issued* June 6, 1922

NO. 1,418,354 Waterproof covering for hats. A. Barnett and W. I. Steinberg—both of Brooklyn, N. Y.
1,418,532 Gun recoil pad. J. R. Caldwell, assignor to The Seamless Rubber Co., Inc.—both of New Haven, Conn.
1,418,592 Syringe valve. H. H. McGee, Waterbury, assignor to Goodyear's India Rubber Glove Manufacturing Co., Naugatuck—both in Connecticut.
1,418,623 Tire casing and supporting means therefor. J. P. Coe, Hastings-on-Hudson, N. Y., assignor to Morgan & Wright, Detroit, Mich.
1,418,661 Protective armor for pneumatic tires. C. W. Loudon, Huntington Park, Calif.
1,418,676 Combined mat and luggage carrier. F. A. Ruff, Newark, N. J.
1,418,819 Garment-fastener button. J. Maltby, assignor to Waterbury Buckle Co.—both of Waterbury, Conn.
1,418,823 Garment-fastener button. T. H. Miller, assignor to Waterbury Buckle Co.—both of Waterbury, Conn.
1,418,854 Combined wheel and tire. J. S. Webster and H. Hunt—both of Seattle, Wash.
1,419,001 Resilient tire. V. O. Woodruff, Bridgeton, N. J.
1,419,038 Inflation mechanism. E. L. Fuller, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.
1,419,045 Pneumatic tire. C. H. Hamilton, South Devon, England.
1,419,061 Reenforced rubber propeller. H. T. Kraft, assignor to The Goodyear Tire & Rubber Co.—both of Akron, O.

Issued* June 13, 1922

1,419,272 Inflatable life preserver. A. Kolberg, Sheboygan, Wis.
1,419,329 Vehicle wheel. R. R. Vale, Milford, Del.
1,419,343 Rubber tire. A. Witzel, Ludwigsburg, Germany. (Granted under the provisions of the act of March 3, 1921, 41 Statute Law, 1913.)
1,419,442 Inner tube. F. E. Bessler, Akron, O.
1,419,443 Inner tube. F. E. Bessler, Akron, O.
1,419,453 Tire patch. J. S. Fritz, Zanesville, O.
1,419,470 Pneumatic tire. I. A. Reasoner and D. J. Flintjer—both of Winona, Mo.
1,419,679 Pneumatic valve. Z. Littman, New York, N. Y., assignor to Littman Loxair Valve Corporation, a Delaware corporation.
1,419,768 Sectional pneumatic tire. W. H. Schroeder, East Orange, N. J.
1,419,885 Tire attachment. S. J. Moss, Dennison, O.

Issued* June 20, 1922

1,419,924 Man's garter. M. B. Hammond and H. H. Taylor, assignors to The Thomas P. Taylor Co.—all of Bridgeport, Conn.
1,419,975 Vehicle wheel. S. H. Manchester, Winsted, Conn.
1,420,081 Pneumatic tire. V. Dirienzo, Madison, Wis.
1,420,245 Pneumatic-tire valve. E. D. Dougherty, Dallas, Tex.
1,420,330 Artificial foot. G. E. and W. L. Marks—both of Sound Beach, Conn.
1,420,361 Protector. C. F. Bennett, assignor to Bennett Elastic Web Co.—both of Chicago, Ill.
1,420,376 Rubber type. H. H. Hellesoe, Chicago, Ill.
1,420,392 Pneumatic tire protector. C. Taylor, Newport, R. I.
1,420,499 Pneumatic-tire valve. H. F. Richter, Los Angeles, Calif.

Issued* June 27, 1922

1,420,655 Inner-tube protector. W. C. Guild, Marionville, Mo.
1,420,674 Resilient tire. J. S. Williams, Riverton, N. J.
1,420,775 Nonslipping tread. F. H. Stanwood, assignor to Stanwood Equipment Co.—both of Chicago, Ill.
1,420,776 Step plate. F. H. Stanwood, assignor to Stanwood Equipment Co.—both of Chicago, Ill.
1,420,937 Window cleaner. C. F. Mumaw, Scranton, Pa.
1,420,979 Tire and punctureproof protector therefor. E. Ehlich, Endicott, N. Y.
1,420,997 Combined tire gage and filling valve. A. A. Freeman, Oakland, Calif.
1,421,029 Resilient tire. A. V. Roe, Burlesdon, England.
1,421,098 Handle grip. R. H. Phillips, assignor to Essex Rubber Co.—both of Trenton, N. J.
1,421,106 Cushion tire. C. O. Snedeker, Bloomington, Ill.
1,421,115 Tire construction. G. R. Williams, San Francisco, Calif.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

Granted June 6, 1922.

219,200 Tire valve. M. C. Schweinert, New York, N. Y., and H. P. Kraft, Ridgewood, N. J.—both in the U. S. A.
219,229 Ear protector. L. Cenerini, Bristol, Rhode Island, U. S. A.
219,250 Inner tube shock absorber. W. Drury, Hammersmith, London, England.
219,253 Facial wrinkle remover. H. L. Eager, Brooklyn, New York, U. S. A.
219,261 Textile fabric yarn, comprising an elastic rubber core and a cover of other material. I. Garon, Duluth, Minn., U. S. A.
219,270 Dress skirt shield. S. C. Hannaford, Cincinnati, Ohio, U. S. A.
219,328 Cushion tire. C. S. Preston, San Diego, Calif., U. S. A.
219,461 Vulcanizing tool. The Reliance Curing Core Limited, assignee of J. P. Holden—both of Toronto, Ontario.
219,464 Tire valve spreader. A. Schrader's Son, Inc., New York, N. Y., assignee of H. P. Kraft, Ridgewood, N. J.—both in the U. S. A.
219,483 Inner tube. H. C. Privett, assignor, and C. R. Privett, assignee of ½ of the interest, and H. F. Privett, assignee of ¼ of the interest—all of Los Angeles, Calif., U. S. A.

Granted June 13, 1922

219,524 Adapter for tire valves. A. Schrader's Son, Inc., New York, N. Y., assignee of H. P. Kraft, Ridgewood, N. J.—both in the U. S. A.
219,525 Tire valve dust cap. A. Schrader's Son, Inc., New York, N. Y., assignee of H. P. Kraft, Ridgewood, N. J.—both in the U. S. A.
219,526 Tire valve tool. A. Schrader's Son, Inc., New York, N. Y., assignee of H. P. Kraft, Ridgewood, N. J.—both in the U. S. A.
219,559 Rubber heel. F. Berenstein, Chelsea, Mass., U. S. A. (Reissue of No. 176,532).
219,585 Tire pressure gage. H. Gosstrom, Chicago, Ill., U. S. A.
219,638 Tire gage. A. Schrader's Son, Inc., New York, N. Y., assignee of H. P. Kraft, Ridgewood, N. J.—both in the U. S. A.
219,642 Tire pressure gage. The Tirometer Valve Corporation of America, assignee of A. Badowski, Charleston, W. Va.—both in U. S. A.
219,643 Tire pressure gage. The Tirometer Valve Corporation of America, assignee of A. Badowski, both of Charleston, W. Va.—both in U. S. A.
219,647 Inner tube. W. K. Hughes and S. G. Pirani, Melbourne, assignees of E. W. Thurlow, Brighton—both in Victoria, Australia.

Granted June 20, 1922

219,681 Cushion liner for tires. A. R. Brown, El Paso, Tex., U. S. A.
219,694 Weather strip. J. C. Dunham, Oklahoma City, Okla., U. S. A.
219,704 Nipple. G. A. Highland, Scranton, Pa., U. S. A.
219,840 Hose supporter. C. W. Egerton and J. W. Hanf—both of New York, New York, U. S. A.
219,876 Blowout patch and holder. C. L. Durham, Kansas City, Mo., U. S. A.
219,916 Airless tire. F. E. Nelson, Chicago, Ill., U. S. A.
219,925 Tire valve dust cap. W. E. Rowsome, Belleville, Ontario.
219,971 Inner tube. U. H. Coste and S. C. Gilbert, assignee of ½ of the interest—both of Vancouver, British Columbia.

Granted June 27, 1922

220,096 Stocking with elastic band. Julius Kayser & Co., assignee of R. H. Baruth—both of New York, New York, U. S. A.
220,198 Tire armor and inner tube. S. I. Baer, Youngstown, Ohio, U. S. A.
220,239 Life preserver suit. L. V. Kevicsky, New York, New York, U. S. A.
220,246 Resilient tire. C. G. Lundstrom, Boone, Ia., U. S. A.
220,250 Armored tire. W. A. Michero, Fort Worth, Tex., U. S. A.
220,270 Cushion tire. E. R. Simms, Scottdale, Pa., U. S. A.
220,283 Rubber heel. G. F. Wells, Elyria, Ohio, U. S. A.
220,291 Tire casing. O. Zancan, New York, New York, U. S. A.

The United Kingdom

Published May 31, 1922

177,836 Elastic webbing sweat-bands for hats. H. L. Moses, Esplanade Apartments, Eutaw Place, and M. S. Levy & Sons, Inc., Lombard street—both in Baltimore, Md., U. S. A.
177,954 Cord fastenings. W. A. Mather, The Rowans, Hawthorn Lane, and J. Smithies, Manchester Road—both in Wilmslow, near Manchester.
177,957 Latex-collecting cup carrier. H. Hawthorn, 16 Upper Gloucester Place, and J. H. E. Francis, 140 Trundleys Road, Deptford—both in London.
177,987 Marking golf balls. A. G. Hupfel, Riverside Hotel, Reno, Nev., U. S. A.
177,999 Solid tire. F. Reddaway & Co., Limited, and J. Muskett, Cheltenham street, Pendleton, Manchester.
178,012 Rubber file handle. J. L. Osgood, 45 Pearl street, Buffalo, New York, U. S. A.
178,013 Rubber knee grips for motorcycles. F. W. M. Pedley, Oxford Works, Great Charles street, Birmingham.
178,027 Solid or pneumatic tire composed of alternating layers of rubber and fabric. J. H. Blackburn, 312 New Hall Lane, Preston, Lancashire.
178,045 Combination pneumatic and solid tire. A. Scott, Norton Cemetery, Woodseats, Sheffield.
178,062 Self-sealing inner tube. Society Anonyme Des Etablissements Hutchinson, 124 avenue des Champs Elysees, Paris, France. (Not yet accepted).

Published June 8, 1922

178,101 Tire valve dust cap. A. Schrader's Son, Inc., 470 Vanderbilt avenue, Brooklyn, assignee of M. C. Schweinert, 42 Riverside Drive, New York—both in New York, U. S. A. (Not yet accepted).
178,116 Spring suspension for vehicles, with a rubber block. L. Fournier, 5 Villa Croix, Nivert, Paris, France. (Not yet accepted).
178,130 Rubber mud-guard. E. A. O. Bjerager, Lynge, Denmark. (Not yet accepted).
178,169 Elastic neck-tie. J. R. Chambers, 39 Badminton Road, Clapham Common, London.

Chemical Patents will be found on page 745. Machinery patents on pages 751-752.

178,186 Gramaphone horns of hard rubber. A. T. Collier, Danesfield House, Upper Lattimore Road, St. Albans, Hertfordshire.
178,197 Spring wheels with rubber tread. E. Jones, 6 Carlton Terrace, Milton Road, Edge Lane, Liverpool; and J. Gair, 165 Lynton Road, Acton Hill, and W. S. Williams, 37 Elsham Road—both in London.
178,200 Inner tube with strips of thin rubber forming overlapping flaps. D. J. Chappell, 52 College Hill, Llanelly, Carmartenshire.
178,271 Rubber separators for storage batteries. Chloride Electrical Storage Co., Limited, Clifton Junction, near Manchester; B. Ford, Philadelphia, Pa., U. S. A.
178,305 Golf ball cores. A. F. White, 88 Chancery Lane, London; The B. F. Goodrich Co., 1780 Broadway, New York, New York, U. S. A.
178,321 Reinforced pneumatic tire. A. Buchanan, 20 Peverell Park Road, Plymouth.
178,338 Multiple tube tire. G. Müller, 46 Reinickendorferstrasse, Berlin, Germany.
178,341 Rubber tobacco pouch. H. Smallwood, 30 Girdler's Road, Brook Green, London.
178,343 Udder inflation appliance. J. S. Rae, Linthill, Ayton, Berwickshire.
178,352 Tire tread. O. H. Williams, 225 Sixteenth avenue, Columbus, Ohio, U. S. A.
178,367 Rubber pad in foot-arch supports. Orthopedic Foot Appliances Co., Limited, and F. Krengel, 25 Newbury street, London.
178,369 Cushion liner for tires. A. E. Brown, 1257 Ohio street, El Paso, Tex., U. S. A.
178,386 Rubber shock absorbers. W. Freckelton, 85 Hirst Gate, and E. Adamson, 100 Doncaster Road—both in Mexborough, Yorkshire.
178,389 Renewable horseshoe-shaped rubber heel. W. D. Sternberg, 19 City Road, London.
178,410 A tire foundation comprising threads arranged at right-angles to the tire edges. G. Cardile, 8 Corso Venezia, and S. Riva, Caselle Torinese—both in Turin, Italy. (Not yet accepted.)

Published June 14, 1922.

178,464 Rubber ring to prevent stones from lodging between twin tires. H. R. Neithard, 145 Rue du Temple, Paris, France. (Not yet accepted.)
178,496 Tire protector. Wood-Milne, Limited, 2 Central Buildings, Westminster, and H. S. Potter, 26 Cullinan Buildings, Main street, Johannesburg, South Africa.
178,548 Combination solid and pneumatic tire. M. and C. F. M. Hurd—both at 3 Linden avenue, and L. Pexton, The Grange, Dore—both in Sheffield.
178,565 Inner tube. R. C. Spratling, Opelika, Alabama, U. S. A.
178,606 Pneumatic chain tire. C. M. Gautier, 27A Bangalore street, Putney, London.
178,618 Rubber mud-guard. G. Robbens, 2 Horn Hill, South Lowestoft, Suffolk.
178,626 Football closure. A. A. Nevatte, 92 Chesterfield Road, Copnor, and O. E. Fallick, 29 Highland Road, East Southsea—both in Portsmouth.
178,713 Sponge-rubber abdominal belt. E. W. Salt, 5 Cherry street, Birmingham.
178,756 Mud-guard with rubber rim. R. Jones, 129 Norfolk Road, and J. T. Rutherford, 56 Clive Terrace—both in Byker, Newcastle-on-Tyne.

Published June 21, 1922.

179,097 Closures for hot water bottles. A. Schrader's Son, Inc., 470 Vanderbilt avenue, Brooklyn, assignees of M. C. Schweinert, 42 Riverside Drive, New York—both in New York, U. S. A.

Published June 28, 1922.

179,165 Cushion tire. C. H. Braden, 518 Grosse Building, Los Angeles, Calif., U. S. A. (Not yet accepted.)
179,432 Sponge rubber saddle numnahs. W. P. Wilton, 457 Oxford street, London.
179,442 Cushion tire. C. S. Preston, 3141 Curlew street, San Diego, Calif., U. S. A.
179,462 Armored tire. S. C. Caddy, 205 Richmond Road, Kingston-on-Thames.
179,520 Dust cap for tire valves. W. O. Vivarttas, 31 King avenue, Weehawken, New Jersey, U. S. A. (Not yet accepted.)
179,537 Weighting golf balls. R. F. Arnott, 25 Glenwood Road, Montclair, New Jersey, U. S. A.

New Zealand

Published May 18, 1922

47,622 Nozzle for conveying compressed air to inner tubes. R. Edwards, Herschell street, Napier, N. Z.

Published June 1, 1922

45,534 Milking machine teat cup with ribbed inflation fitted into casing. W. Busby, Kapuni, N. Z.
45,857 Pneumatic horse collar. T. R. Turner, Kuranui Road, Morrinsville, Auckland, N. Z.

Germany

Patents Issued, with Dates of Issue

356,630 (September 23, 1920). Inhaling apparatus. Dr. Paul Lindner, Sybelstrasse 9, Charlottenberg.
356,704 (December 3, 1919). Syringe. Dr. Edmondo Luswergh, Rome, Italy; represented by Dr. B. Monasch, Leipzig.

Design Patents Issued, with Dates of Issue

815,616 (April 25, 1922). Artificial rubber foot. Georg Wildschütz, Kölnerstrasse 275, Düsseldorf.
815,635 (December 8, 1920). Collapsible spring pessary. Medizinisches Warenhaus A.-G., Berlin.
815,679 (April 25, 1922). Rupture band pelotte. Dr. Edmund Jaenel, Sextrostasse 2, Hanover.
815,758 (March 10, 1922). Rubber sole. Düsseldorfer Gummiabsatz-Vertrieb Pisetzki & Moses, Düsseldorf.
815,759 (March 12, 1922). Inhaler. Wikö-Werke Dr. Hentschel G. m. b. H., Dresden.
815,920 (April 29, 1922). Atomizer. Serin & Carls, Köln.
816,194 (August 1, 1921). Nonskid device for truck tires. August Diener, Günderrodestrasse 5 and Ludwig Daschmann, Frankenallee 91, Frankfort-on-the-Main.
816,228 (April 27, 1922). Pneumatic tires and tubes divided into segments. Gottlieb Büchner, Karlstrasse 41, Berlin.
816,278 (April 3, 1922). Rupture band pelotte. Schmid & Rehfuss, Tailfingen, O. A. Balingen.
816,300 (April 22, 1922). Rubber heel. Santo G. m. b. H., Berlin.
816,450 (May 31, 1921). Rubber heel. Karl Bayer, Herrenkellergasse 1, Ulm a. D.
816,727 (May 3, 1922). Combination comforter for children. Wilhelm Pichmann, Sybelstrasse 42, Charlottenburg.
816,736 (May 6, 1922). Inhaling apparatus. Oesterreichische Patentverwertungs-Gesellschaft, Thoria, G. m. b. H., Vienna; represented by: K. Walther, Berlin-Friedenau.
817,039 (March 1, 1922). Rubber sole and heel. Technische Handels-Gesellschaft m. b. H., Köln.

Trade Marks

The United States

Two Kinds of Trade Marks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the latter act, trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

Granted June 6, 1922, Act of February 20, 1905

155,618 "EVER READY" above representation of a bear, all within a double-outlined circle—brassières, waterproof aprons, infants' pants, corsets, hose supporters, etc. C. Benedict Manufacturing Co., San Francisco, Calif.
155,712 THE HIL-AC BRAND between upper parts of two concentric circles—elastic braids, etc. The Hill & Lacross Co., Cranston, R. I.
155,759 MARATHON—belt buckles not of precious metal. The Marathon Tire & Rubber Co., Cuyahoga Falls, O.
155,760 MARATHON and representation of a marathon runner, on red-bordered black background, beneath the words GENUINE MARATHON WASHABLE FLEXYDE AVOID IMITATIONS NONE GENUINE WITHOUT THIS TRADE MARK—leather, fabric, or rubber belts for outer garments. The Marathon Tire & Rubber Co., Cuyahoga Falls, O.

Act of March 19, 1920, Section 1 (b)

155,901 MONROE—pneumatic tires. Monroe Tire Corporation, Chicago, Ill.

Granted June 13, 1922, Act of February 20, 1905

155,949 ROGERS THE MARK OF QUALITY within an oval—rubber compositions for coating and cementing roofs. Detroit White Lead Works, Detroit, Mich.
155,962 GUARDIAN—boots and shoes of leather, rubber, fabric, and compositions. Wm. Filene's Sons Co., Boston, Mass.
156,031 NACO within double-outlined diamond intersecting four concentric circles, all within a square—asbestos steam pipe coverings, insulations, and roofings. Nott-Atwater Co., Spokane, Wash.

Act of March 19, 1920, Section 1 (b)

156,110 BEST MADE BROOKLYN'S TINY WEIGHT TRADE MARK WARRANTED—dress shields. Brooklyn Shield & Rubber Co., Brooklyn, N. Y.
156,116 SEA ISLAND SHOE CO.—overshoes, galoshes, rubber boots, gymnasium shoes, etc. Cohen-Sulkis Shoe Co., Inc., Boston, Mass.
156,118 DOUBLE WEAR within a circle—rubber heels and soles. Dryden Rubber Co., Chicago, Ill.
156,133 "THOSE BETTER SHOES"—women's shoes made of rubber and leather, rubber and fabric, etc. John Kelly Inc., Rochester, N. Y.
156.137 FOOT KARE—shoes, boots, slippers, and sandals of leather, rubber, fabric, or combinations. H. Malkin's Sons, New York, N. Y.
156,148 NATURE FORM—girls', boys', and infants' shoes of leather, fabric, and combinations with rubber. Van Degrift's, Los Angeles, Calif.

Renewals

21,591 RELIEF—wringers. Registered August 9, 1892. The American Wringer Co., Providence, R. I., and New York and Auburn, Rubber Co., Cuyahoga Falls, O. N. Y. Renewed August 9, 1922.
21,593 BANNER—wringers. Registered August 9, 1892. The American Wringer Co., Pervidence, R. I., and New York and Auburn, N. Y. Renewed August 9, 1922.

Granted June 20, 1922, Act of February 20, 1905

156,192 B & Co as monogram above INC.—rubber heels. Brooks & Co., Inc., Boston, Mass.
156,232 XLO as a monogram within a circle—vulcanization accelerator. Dovan Chemical Corporation, Wilmington, Del.
156,259 Conventionalized quartered shield with device—shoe heels and soles of or containing rubber. The General Tire & Rubber Co., Akron, O.
156,302 HM—golf balls. Holmac, Inc., New York, N. Y.
156,336 PEAKTIK—shoes of leather, rubber, and fabric for women and children. James McCreery & Co., New York, N. Y.

156,351 Representation of a tire through which is thrust a forearm, the hand wearing a rubber glove and holding a spoon—bathing caps, wearing apparel belts, and rubber household gloves. The Miller Rubber Co., Akron, O.

156,408 WARSHOTTO BOOT accompanied by a square bearing the initials S.D and a diamond bearing the letters ES at one end and EE at the other, all within a circle—boots and shoes of a combination of leather, rubber, and fabric. Rubberhide Co., Boston, Mass.

156,434 Silhouette representation of a pair of balances—golf balls. St. Mungo Manufacturing Co. of America, Newark, N. J.

156,448 BREAKWATER—raincoats. F. W. Tully, Boston, Mass.

156,456 V within a circle—heels and soles of or containing rubber. Victory Rubber Co., Seattle, Wash.

156,472 LUBRIKUP in white letters on a black circular disk within a circle and between the disk and circle the words Williamsport, Penna., U. S. A., in black letters—composition packing of canvas and rubber. Williamsport Development Co., Williamsport, Pa.

Act of March 19, 1920, Section 1 (b)

156,489 DUBBLE-WEAR superimposed above the representation of a tire enclosing a landscape with an automobile in the foreground—retread strips for tires. New Standard Rubber Co., Inc., Los Angeles, Calif.

Renewals

21,924 EXTRA beneath representation of a crown bearing across the bottom the words PAGE BELTING CO.—certain named rubber and leather goods. Registered November 1, 1892. Page Belting Co., Concord, N. H. Renewed November 1, 1922.

Granted June 27, 1922, Act of March 19, 1920, Section 1 (b)

156,536 LAMINA—machine belting composed of rubber or rubber and fabric. The Manhattan Rubber Manufacturing Co., Passaic, N. J.

156,556 THE TEXAS COMPANY—rubber roofing stock of asphalt combined with reclaimed rubber. The Texas Co., Houston, Tex., and New York, N. Y.

156,588 THE BEST INNER TUBES—inner tubes. H. V. Veghte, New York, N. Y.

Renewals

18,744 STAPLE—hydraulic hose and machine belting. Registered December 30, 1890. New Jersey Car Spring and Rubber Co., Jersey City, N. J.; New Jersey Car Spring and Rubber Co., Inc., a New York corporation, assignee. Renewed December 30, 1920.

21,386 A red stripe between two blue ones—fire hose. Registered June 28, 1892. F. Reddaway & Co., Manchester, Eng., and New York, N. Y.; F. Reddaway and Co., Ltd., assignee. Renewed June 28, 1922.

The Dominion of Canada

Registered

31,250 W. U. B. Co. as monogram—secondary batteries and connectors therefor, the batteries having rubber cases or parts. Westinghouse Union Battery Co., Swissvale, Pa., U. S. A.

31,310 PARKEN, across which is written on a band the words, LUCKY CURVE—fountain pens. The Parker Pen Co., Janesville, Wis., U. S. A.

31,326 BON-AMI within a double border, and inside the outer border the letters K. R. K. C.—rubber footwear. The Kaufman Rubber Co., Ltd., Kitchener, Ont.

31,342 FIROCK—asbestos fiber, compositions, etc. Asbestos Mines, Ltd., Montreal, Que.

31,343 ASBESTOWALL—asbestos fiber, compositions, etc. Asbestos Mines, Ltd., Montreal, Que.

31,344 Representation of an Indian's head—asbestos and its products. Consolidated Asbestos, Ltd., Montreal, Que.

31,347 LAS-STIK—rubber and fabric patches for inner tubes or tires. Las-Stik Patch Manufacturing Co., Hamilton, Ohio, U. S. A.

31,355 S. S. WHITE—dental supplies, etc. The S. S. White Dental Manufacturing Co., Philadelphia, U. S. A.

The United Kingdom

Published May 31, 1922

420,940 SEAJOY—car steppers. V. P. Buck, Apartado 52, Jerez de la Frontera, Spain; address in United Kingdom, care of Haseltine, Lake & Co., 28 Southampton Buildings, London, W. C. 2.

422,693 SAMCO—druggists' sundries. S. Murray & Co., Ltd., 11 Farringdon Road, London, E. C. 1.

422,699 ROTH WING separated by a poised eagle, all within a square—balata machine belting; rubber insertion, sheeting, and valves. Rothschild & Wing, Ltd., 7 Farringdon Road, London, E. C. 1.

423,877 SYLCA—dental translucent stopping. Claudius Ash, Sons & Co., 5-12 Bread street, Golden Square, London W. 1.

424,612 "LAPECO BRAND"—rubber soles and heels, sold separately. The London & Provincial Equipment Co., Ltd., 4-5 Warwick Court, Holborn, London, W. C. 1.

Published June 7, 1922

413,224 Conventionalized heart design—electrical insulating materials made of cotton and synthetic resins, and petrol rubber tubing. British Engineering Standards Association, 28 Victoria street, Westminster, London, S. W. 1. (Trade Marks Acts, 1905 to 1919, Section 62.)

420,706 PARAPED—rubber soles and heels. R. F. Browne & Co., 158 Leadenhall street, London, E. C. 3.

421,173 AERC—rubber cushions for billiard tables. J. Ashcroft, trading as J. Ashcroft & Co., 37 Victoria street, Liverpool.

424,707 APEX—sheathing, roofing, sarking and waterproofing felts, all in Class No. 50. Vulcanite, Limited, Laganvale, Stranmillis Road, Belfast.

425,168 Three concentric circles, the inmost one containing a modified form of the tahgook symbol, and the second one being divided into three equal parts by radii between it and the inmost circle—rubber and gutta percha goods not included in classes other than Class No. 40. Fordyce Charles Jones, 212-213 Upper Thames street, London, E. C. 4.

Published June 14, 1922

421,527 RIDO—rubber and gutta percha goods not included in classes other than Class No. 40. Naamlooze Vennootschap Vereenigde Nederlandsche Rubberfabrieken, 162A Dunolaan, Doorwerth, Heveadorp, Holland; address in the United Kingdom, care of Dicker & Pollak, 20-23 Holborn, London, E. C. 1.

422,085 DUCK BRAND between two concentric circles, the inner one containing representation of a duck in white against a black background and bearing the word BRAND—rubber and gutta percha goods not included in classes other than Class No. 40. United States Rubber Co., New Brunswick, N. J., and 1790 Broadway, New York City, both in U. S. A.; address in United Kingdom, care of Haseltine, Lake & Co., 28 Southampton Buildings, London, W. C. 2.

424,912 KATEET—rubber golf tees. E. J. Byrne, 17 Mincing Lane, London, E. C. 3.

425,439 MAXFLI—golf balls. The Dunlop Rubber Co., Ltd., Dunlop House, 1 Albany street, Regent's Park, London, N. W. 1.

Published June 21, 1922

424,189 HESCA—pneumatic tires. The Chase Cycle Co., Ltd., 52-53 Snow Hill, Birmingham.

424,352 PAREMSÉ—rubber and gutta percha goods not included in classes other than Class No. 40. Plantation Rubber Manufacturing Co., Ltd., 14 Mincing Lane, London, E. C. 3.

424,755 Conventionalized representation of two natives collecting rubber latex from tree, accompanied by the words HEVEA and HOLLAND—goods manufactured solely from Hevea rubber. Naamlooze Vennootschap Vereenigde Nederlandsche Rubberfabrieken, 162A Dunolaan, Doorwerth, Heveadorp, Holland; address in United Kingdom, care of Dicker & Pollak, 20-23 Holborn, London, E. C. 1.

424,730 ECLIPSE—all goods included in Class No. 40, but excluding certain named rubber goods. J. G. Ingram & Son, Ltd., The London India Rubber Works, Felstead street, Hackney Wick, London, E. 9.

425,137 DURASTIC—atomizers. P. E. Cheeseman, The Well Hall, Well Hall Road, Eltham, London, S. E. 9.

425,523 Representation of a classical male figure—rubber pads for boots and shoes. Blakey's Boot Protectors, Ltd., Armley Malleable Ironworks, Medder Place, Armley, Leeds.

425,524 Representation of a classical female figure—rubber pads for boots and shoes. Blakey's Boot Protectors, Ltd., Armley Malleable Ironworks, Medder Place, Armley, Leeds.

425,644 CROMWELL and portrait of Oliver Cromwell—all goods included in Class No. 40. J. & A. Hillman, Ltd., Castle Leather Works, Trindle Road, Dudley, Worcestershire.

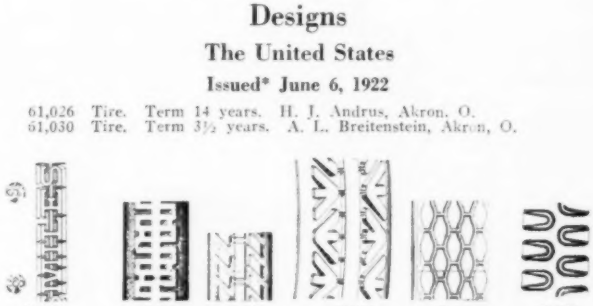
Designs

The United States

Issued* June 6, 1922

61,026 Tire. Term 14 years. H. J. Andrus, Akron, O.

61,030 Tire. Term 3½ years. A. L. Breitenstein, Akron, O.



61,026 61,102 61,101 61,143 61,030 61,033

61,033 Tire. Term 3½ years. B. Dahl, Minneapolis, Minn.

61,042 Rubber mat. Term 7 years. H. Joseph, assignor to Joseph Sanitary Rug Co.—both of Milwaukee, Wis.

Issued* June 20, 1922

61,101 Tire tread. Term 14 years. C. F. Ofensend, assignor to The Miller Rubber Co.—both of Akron, O.

61,102 Tire tread. Term 14 years. H. W. Osborn, Bedford, O.

Issued* June 27, 1922

61,135 Abdominal protector for boxers. Term 14 years. M. Golomb, New York, N. Y.

61,143 Tire tread. Term 14 years. J. J. Moriarty, assignor to The Victor Rubber Co.—both of Springfield, O.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

The Dominion of Canada

5,461 Rubber doll. Patented June 7, 1922. Craig-Allen St. C. McKay, Toronto, Ont.

5,474 Bathing purse. Patented June 15, 1922. L. Baldwin, Toronto, Ont.

5,478 Tire tread. Patented June 20, 1922. The Bawden Machine Co., Limited, Toronto, Ont.

Review of the Crude Rubber Market

New York

Just previous to the first of the month the New York spot price, which had responded to the increase in London, experienced a further advance of a cent a pound to 16¼ cents due to the announcement of the pooling of 100,000 tons of London stock, presumably to be held until there is a market for it, under the control of the British Rubber Growers' Association and the Rubber Associations of London, The Hague, and America.

Amsterdam reports were to the effect that 80 per cent of the Dutch growers present at a meeting held there had voted in favor of restriction and that a committee had been appointed to advise with the government.

The market for a few days following this report exhibited some activity and a moderate reaction in prices which showed a steady decline through the next three weeks to the 14½-cent level. During this period demand was small, buyers indifferent, and the tone of the market dull and lifeless.

About the 12th of the month there was a better tone locally for Parás, owing to advices from Brazil of shipments to Europe at higher than American prices in competition with plantation rubber.

Very little factory interest was shown during the last week of the month and plantation prices were about ½ cent lower than last month.

Importations of all grades during June were 15,750 tons, compared with 13,477 tons for June one year ago. Plantation arrivals for June were 14,851 tons compared with 12,361 tons for June one year ago.

Spot and future quotations on standard plantation and Brazilian grades were as follows:

Plantations. July 5. Spot first latex crêpe, 15⅛-15¼ cents; August-September, 15⅜-15½ cents; July-December, 15½-15⅝ cents; October-December, 15¾-16 cents. July 25. Spot first latex crêpe, 14¾ cents; August-September, 15 cents; October-December, 15½ cents; January-March, 16 cents.

July 5. Spot ribbed smoked sheets, 15⅛-15¼ cents; August-September, 15⅜-15½ cents; July-December, 15½-15⅝ cents; October-December, 15¾-16 cents. July 25. Spot ribbed smoked sheets, 14¾ cents; August-September, 15 cents; October-December, 15½ cents; January-March, 16 cents.

July 5. Spot, No. 1 amber crêpe, 14¾-15 cents; August-September, 14¾-15 cents; July-December, 15-15¼ cents. July 25. Spot, No. 1 amber crêpe, 14½ cents; August-September, 14¾ cents; October-December, 15¼ cents.

July 5. Spot, No. 1 rolled brown crêpe, 12¼-12½ cents; August-September, 12¼-12½ cents; July-December, 12½-12¾ cents. July 25. Spot, No. 1 rolled brown crêpe, 11⅝-12 cents; August-September, 11¾ cents; October-December, 12¼ cents.

South American Pará and Caucho. July 5. Spot, up river fine, 18 cents; islands fine, 16¾ cents; upriver coarse, 12½ cents; islands coarse, 8 cents; Cametá, 9-9½ cents; caucho ball, 12½ cents. July 25. Spot, upriver fine, 20 cents; islands fine, 18 cents; upriver coarse, 13¼ cents; islands coarse, 9½ cents; Cametá, 9½ cents; caucho ball, 10½-13 cents.

London

The market during the month was on the whole quiet and steady. Spot stocks continued to show a slow increase and on the 15th were reported as 72,051 tons.

Spot ribbed smoked sheets ranged for the month from 7½ to 8¼*d.* a pound. The latter price was reached by reason of the reports favorable to pooling and restriction.

New York Quotations

Following are the New York spot quotations per pound, for one year, one month ago, and July 25, the current date:

Plantation Hevea

	August 2, 1921	July 1, 1922	July 25, 1922
CREPE			
First latex	$0.15½@	$0.15¼@.15⅜	$0.14¾@
Off latex	.15 @	.15 @	.14½@.14½
Amber No. 1	.13¾@	.15 @	.14½@.15
Amber No. 2	.12¾@	.14½@	.14¼@.14¾
Amber No. 3	.11¾@	.14 @	.14 @.14½
Brown, thick thin	.12⅛@.13	.14½@	.14 @
Brown, specky	.11½@	.13¾@	.13¼@.13½
Brown, rolled	.11¼@	.11½@	.11½@.12
SHEET			
Smoked, ribbed	.14½@	.15¼@.15⅜	.14¾@
Smoked, plain	.12 @	†.14¾@	.13½@
Unsmoked	@	†.14 @	†.13 @
Colombo scrap No. 1	@	.12 @	.12 @
Colombo scrap No. 2	@	.10½@	.10½@

East Indian

PONTIANAK			
Banjermassin	.06½@.07	.07½@	.07½@
Palembang	.07¾@	.08 @	.08¾@
Pressed block	@	.12¼@	.12 @
Sarawak	@	.06½@	.06 @

South American

PARAS			
Upriver fine	.17 @.17½	.18 @	.20 @
Upriver fine*	@	*.27½@	*.28 @
Upriver medium	.15½@	.17 @	.17½@
Upriver coarse	.08½@	.12¾@	.13¼@
Upriver weak, fine	.14 @	.15 @.15½	†.15½@
Islands fine	.16¼@	.16¾@	.18 @
Island fine*	@	*.26 @	*.27 @
Islands medium	.13½@	.15 @.16	†.16 @
Islands coarse	.08 @.08½	.08 @	.09½@
Cametá	.08¾@	.09½@	.09½@
Cametá*	@	*.19 @	*.19 @
Acre Bolivian fine	.17 @	.18½@	.20¼@
Acre Bolivian fine*	@	*.27½@	*.28 @
Beni Bolivian	@	.18½@	†.20¼@
Madeira fine	.18½@	.19 @.19¾	.23 @
Peruvian fine	.15½@	.16½@.17	.17¾@
Tapajos fine	.15 @	.17 @	.18 @

Maniçobas

CAUCHO			
Upper caucho ball	.$0.10 @	$0.12¾@	$0.13½@
Upper caucho ball*	@	*.18½@	*.18½@
Lower caucho ball	.08¼@	.10½@	.10½@.11½
Ceará negro heads	.10 @	†.10 @	.10 @
Ceará scrap	.07½@	†.05 @	.05 @
Maniçoba 30% guaranty	.09 @	†.08 @	.09 @
Mangabeira, thin sheet	.10 @	†.12 @	.12 @

Centrals

Central scrap	.10 @.11	.08 @.09	.08 @.09
Central scrap and strip	.08 @.10	.06½@.07	.07 @.08
Central wet sheet	.02 @.04	.04 @.06	.06 @.08
Corinto scrap	.10 @.11	.08 @.09	.08 @.09
Esmeralda sausage	.10 @.11	.08 @.09	.08 @.09
Guayule washed and dried	.25 @	.26 @	.26 @

Africans

Benguela, No. 1, 28½%	.04 @.05	@	@
Benguela, No. 2, 32½%	.06 @	†.07 @.07¼	.05 @
Congo prime, black upper	@	†.14 @.15	.14 @
Congo prime, red upper	@	†.12 @	.12¾@
Kassai, black	@	@	.14 @
Kassai, red	@	†.10½@.12	.10 @.12

Gutta Percha

Gutta Siak	.14 @.15	.15 @	.14¾@
Red Macassar	2.50 @3.00	2.85 @3.00	2.75 @

Balata

Block, Ciudad Bolivar	.53 @.54	.51 @	.50 @.51
Colombia	.39 @.40	.42 @.45	.45 @
Panama	.39 @.40	.43 @	.44 @
Surinam sheet	.67 @.68	.68 @	.70 @
amber	.70 @	.74 @.76	.73 @

Chicle

Colombia	@	.50 @	.50 @
Honduras	@	.70 @	.70 @
Venezuela	@	.72 @	.70 @
Yucatan fine	@	.75 @.80	.75 @

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.

Reclaimed Rubber

Reclaimers report very little change in the market situation which is not expected to improve materially until crude rubber becomes more active. The production of reclaimed rubber continues much below normal and is confined to contract order for standard stocks.

The following prices are nominal and unchanged since last month.

New York Quotations

JULY 25, 1922

Prices subject to change without notice

STANDARD RECLAIMS			
Floating	$0.12	@	$0.13
Friction	.12	@	.13
Mechanical	.08	@	.10
Shoe	.10¼	@	.10¾
Tires, auto	.09	@	.10
truck	.09	@	.10
White	.13	@	.14

Comparative Low and High New York Spot Rubber Prices

	July 1922*	July 1921	July 1920
PLANTATIONS			
First latex crêpe	$0.14½@$0.15¾	$0.14 @$0.17	$0.30 @$0.35¼
Smoked sheet, ribbed	.14½@ .15¾	.11½@ .15½	.29½@ .35
PARAS			
Upriver, fine	.18 @ .20	.15½@ .17½	.34½@ .35½
Upriver, coarse	.12¾@ .14	.07½@ .09	.22 @ .32
Islands, fine	.16⅞@ .17½	.16 @ .17	.33 @ .37
Islands, coarse	.08 @ .09½	.07 @ .09	.21 @ .31
Cametá	.08 @ .09½	.07¼@ .08½	.19 @ .20½

*Figured to July 25, 1922.

Amsterdam Rubber Market

JOOSTEN & JANSSEN, Amsterdam, report under date of July 7, 1922:

The market has again been weak throughout and mostly very quiet. In the terminal market some business resulted only in the beginning of the week and trading in spot parcels or for shipment has been more active only on a few days. The close is quiet at about the lowest prices of the week:

Hevea crêpe, Fl. 40½.	Sheets, Fl. 41	spot.
Hevea crêpe, Fl. 41½.	Sheets, Fl. 42	July to September.
Hevea crêpe, Fl. 43.	Sheets, Fl. 43½	October to December.
Hevea crêpe, Fl. 44½.	Sheets, Fl. 45	January to March.

Singapore Rubber Market

GUTHRIE & CO., Limited, Singapore, reports, under date of June 11, 1922:

During the past week the market has been fluctuating and uncertain. Prices advanced 2 cents on "shorts" covering, but relapsed prior to the weekly auctions which opened to a distinctly weak market. Demand was poor and although values show little change from the previous sale, the general average was lower.

Standard quality sheet was not in request, buyers refusing to pay a premium for this grade over good F. A. Q. which sold up to 24½ cents. Off sheet was fairly steady. Pale crêpes were not in favor and only small sales were effected at 23½/24 cents. Lower grade crêpes were unchanged but weak.

Of 575 tons cataloged, 311 tons were sold.

The following is the course of values:

	In Singapore per Pound	Sterling Equivalent per Pound in London
Sheet, fine ribbed smoked	No sales	No sales
Sheet, good F. A. Q.	23½ @ 24½	—/ 7⅝ @ —/ 7⅞
Sheet, off quality	20 @ 23	/ 6⅜ @ —/ 7½
Crêpe, fine pale	No sales	No sales
Crêpe, good pale	23½ @ 24	-/ 8⅛ @ —/ 8¼
Crêpe, off quality	19½ @ 23	—/ 7 @ —/ 8
Crêpe, fine brown	21 @ 22	—/ 7⅛ @ —/ 7⅝
Crêpe, good brown	18 @ 20½	—/ 6½ @ —/ 7½
Crêpe, dark	13½ @ 20	—/ 5½ @ —/ 7⅛
Crêpe, bark	12 @ 17	—/ 4⅞ @ —/ 6¼

British Malaya Rubber Exports

An official cablegram from Singapore states that 43,941,900 pounds (19,167 tons) of rubber were exported from British Malayan ports in the month of June, compared with 24,789 tons in May and 14,400 tons in April. June transhipments amounted to 3,314,000 pounds (1,479 tons).

New York Average Spot Rubber Prices

PRICES IN CENTS PER POUND

	June, 1922																	July, 1922						
PLANTATIONS	12	13	14	15	16	17	19	20	21	22	23	24	26	27	28	29	30	1	3*	4†	5	6	7	8
Sheet																								
Ribbed smoked											15⅛	15½	15⅝	15⅝	16	15¾	15½	15½	....	....	15⅛	15	14⅞	14⅞
Crêpe																								
First latex	14¾	14¾	14⅝	14⅞	14⅞	14⅞	14⅝	14⅞	14⅞	14⅞	15⅛	15⅛	15⅛	15⅝	16	15¾	15½	15½	....	....	15⅛	15	14⅞	14⅞
Off latex	14⅜	14¼	14¼	14⅜	14⅜	14⅜	14¼	14⅜	14½	14⅜	14⅝	14⅝	14⅝	15⅛	15½	15½	15¼	15⅛	....	....	14¾	14½	14½	14½
No. 1 blanket	14½	14¼	14⅜	14½	14¼	14¼	14⅜	14⅝	14⅝	14½	14⅝	14¾	14⅝	15¼	15⅝	15½	15¼	15¼	....	....	14⅞	14¾	14¾	14⅝
No. 2 blanket	13¼	13¾	13⅞	14	13⅞	13⅞	13⅞	14⅛	14⅛	14	14½	14½	14¼	14¾	15⅛	14⅞	14⅝	14¾	....	....	14½	14¼	14¼	14½
No. 3 blanket	13⅜	13½	13½	13⅝	13⅝	13½	13⅜	13⅝	13¾	13½	13⅞	13¾	13¾	14⅜	14⅜	14⅜	14½	14¼	....	....	14½	14	14	13⅞
Thin, clean, brown	13¾	13¾	13⅞	13¾	13¾	13¼	13¾	14	14	13¾	14	14⅛	14⅛	14⅝	14⅞	14⅝	14½	14½	....	....	14⅛	14	13⅞	14
Specky brown	13¼	13½	13¾	13⅛	13¼	13	13¼	13⅜	13⅜	13¾	13½	13⅝	13½	14⅛	14⅜	14¼	14	14	....	....	13¾	13⅜	13½	13⅛
Rolled brown	11	10⅝	11	10⅝	10⅞	10⅞	10⅞	11⅛	11⅛	11⅛	11⅛	11⅛	11⅛	11⅞	12⅜	12½	12	12⅛	....	....	12⅝	11⅞	11¾	11¾

*No market. †Holiday.

Crude Rubber Arrivals at New York as Stated by Ships' Manifests

Parás and Caucho

	Fine	Medium	Coarse	Caucho	Totals Pounds
JUNE 20. By "Hubert," Pará.					
Paul Bertuch	38,923	3,174	12,893	73,349	128,339
Poel & Kelly, Inc.	.....	.....	11,150	.....	11,150
JULY 5. By "Cuthbert," from Pará, Manáos and Iquitos.					
Paul Bertuch	18,739	.....	.....	.....	18,739
L. Littlejohn & Co., Inc.	11,464	.....	.....	.....	11,464
General Rubber Co.	145,600	8,960	8,960	.....	163,520
JULY 10. By "Virgil," from Pará and Manáos.					
Poel & Kelly, Inc.	21,500	.....	22,622	221,546	265,668
Paul Bertuch	.....	.....	16,401	.....	16,401
L. Littlejohn & Co., Inc.	33,124	.....	.....	.....	33,124
Meyer & Brown, Inc.	‖44,800	.....	.....	123,200	168,000
General Rubber Co.	67,200	.....	22,400	.....	89,600
JULY 11. By "Cameons," Pará.					
General Rubber Co.	67,200	8,960	4,480	.....	80,640
JULY 17. By "Pocone," Pará.					
Paul Bertuch	8,990	12,950	12,050	.....	33,990
H. A. Astlett & Co.	.....	.....	7,000	56,000	63,000
L. Littlejohn & Co., Inc.	.....	104,410	.....	.....	104,410
Schafer & Meyer	.....	.....	§46,284	§3,527	§49,811
JULY 17. By "Dominic," from Pará and Manáos.					
H. A. Astlett & Co.	12,000	.....	.....	.....	12,000
Paul Bertuch	4,073	6,451	6,497	2,927	19,948
General Rubber Co.	.....	.....	.....	.....	¶11,200
Meyer & Brown, Inc.	‖69,440	.....	26,880	.....	96,320
Ultramares Corporation	.....	11,390	.....	.....	11,390

¶Cametá. §Washed and dried in Brazil. ‖Fine and medium.

Crude Rubber Arrivals at New York as Stated by Ships' Manifests—*Continued*

Plantations

(*Figured at 180 lbs. net to the bale or case.*)

	Pounds	Totals
JUNE 19. By "Santa Luisa," Mollendo, Peru.		
W. R. Grace & Co.	540	540
JUNE 23. By "Vardulia," London.		
Poel & Kelly, Inc.	139,170	
Thornett & Fehr, Inc.	240,480	
Baird Rubber & Trading Co.	22,400	402,050
JUNE 23. By "City of Oran," Far East.		
Poel & Kelly, Inc.	202,045	
Converse Rubber Co.	*79,020	
Baird Rubber & Trading Co.	224,000	
General Rubber Co.	866,880	
Charles T. Wilson Co., Inc.	190,400	
Schafer & Meyer	44,800	
L. Littlejohn & Co., Inc.	1,265,600	
Hood Rubber Co.	56,000	
Meyer & Brown, Inc.	190,400	
H. Muehlstein & Co., Inc.	264,320	
Fred Stern & Co., Inc.	412,262	
H. A. Astlett & Co.	313,000	
Various	2,324,473	6,433,200
JUNE 23. By "Eurybates," Far East.		
Poel & Kelly, Inc.	11,189	
Meyer & Brown, Inc.	14,000	
L. Littlejohn & Co., Inc.	509,280	
H. Muehlstein & Co., Inc.	63,840	
Fred Stern & Co., Inc.	107,799	
H. A. Astlett & Co.	90,000	
Various	450,912	1,267,020
JUNE 25. By "M. S. Dollar," Far East.		
Poel & Kelly, Inc.	56,000	
Baird Rubber & Trading Co.	210,560	
Hood Rubber Co.	112,055	
L. Littlejohn & Co., Inc.	772,800	
Meyer & Brown, Inc.	100,800	
Schafer & Meyer	56,000	
Charles T. Wilson Co., Inc.	235,200	
H. Muehlstein & Co., Inc.	95,200	
Fred Stern & Co., Inc.	414,900	
H. A. Astlett & Co.	78,000	
Various	3,091,545	5,223,060
JUNE 25. By "Poleric," Far East.		
Baird Rubber & Trading Co.	112,000	
Charles T. Wilson Co., Inc.	42,560	
Fred Stern & Co., Inc.	20,160	
Various	374,100	548,820
JUNE 27. By "Arcturus," Far East.		
Baird Rubber & Trading Co.	22,400	
L. Littlejohn & Co., Inc.	49,280	
Various	130,820	202,500
JUNE 27. By "Westerdijk," Rotterdam.		
Poel & Kelly, Inc.	64,168	64,168
JUNE 28. By "Port Adelaide," London.		
Various	59,940	59,940
JUNE 29. By "Kentucky," Far East.		
Poel & Kelly, Inc.	116,480	
Baird Rubber & Trading Co.	78,400	
General Rubber Co.	134,400	
L. Littlejohn & Co., Inc.	831,040	
Charles T. Wilson Co., Inc.	134,400	
H. Muehlstein & Co., Inc.	44,800	
Fred Stern & Co., Inc.	87,380	
H. A. Astlett & Co.	22,000	
Various	1,076,860	2,525,760
JUNE 30. By "West Canon," Far East.		
Poel & Kelly, Inc.	15,680	
General Rubber Co.	446,330	
L. Littlejohn & Co., Inc.	286,720	
H. Muehlstein & Co., Inc.	159,040	
Fred Stern & Co., Inc.	62,900	
H. A. Astlett & Co.	11,000	
Various	1,861,430	2,843,100
JULY 2. By "Nieuw Amsterdam," Rotterdam.		
H. Muehlstein & Co., Inc.	56,000	
Various	40,300	96,300
JULY 5. By "President Monroe," London.		
Michelin Tire Co.	41,040	41,040
JULY 5. By "City of Melbourne," Far East.		
Poel & Kelly, Inc.	639,038	
Poel & Kelly, Inc.	*56,000	
Baird Rubber & Trading Co.	190,400	
General Rubber Co.	470,400	
Hood Rubber Co.	78,400	
L. Littlejohn & Co., Inc.	1,553,760	
Meyer & Brown, Inc.	118,720	
H. Muehlstein & Co., Inc.	436,800	
Fred Stern & Co., Inc.	183,455	
Charles T. Wilson Co., Inc.	593,600	
H. A. Aslett & Co.	280,000	
Various	2,369,849	6,970,422
JULY 6. By "West Campgaw," Far East.		
Baird Rubber & Trading Co.	89,600	
General Rubber Co.	181,440	
L. Littlejohn & Co., Inc.	253,120	
H. Muehlstein & Co., Inc.	44,800	
H. Muehlstein & Co., Inc.	*22,400	
Charles T. Wilson Co., Inc.	145,600	
H. A. Astlett & Co.	45,000	
Various	*150	
Various	1,314,320	2,096,430
JULY 9. By "Kendal Castle," Far East.		
Poel & Kelly, Inc.	293,810	
Poel & Kelly, Inc.	*112,000	
Baird Rubber & Trading Co.	190,400	
General Rubber Co.	228,480	
Hood Rubber Co.	*17,000	
Hood Rubber Co.	201,705	
L. Littlejohn & Co., Inc.	1,579,200	
Meyer & Brown, Inc.	168,000	
H. Muehlstein & Co., Inc.	369,600	
Schafer & Meyer	67,200	
Fred Stern & Co., Inc.	175,212	
Charles T. Wilson Co., Inc.	212,800	
H. A. Astlett & Co.	392,000	
Various	3,114,961	7,122,788
JULY 9. By "City of Sparta," Far East.		
Poel & Kelly, Inc.	132,020	
Hood Rubber Co.	*88,530	
L. Littlejohn & Co., Inc.	949,760	
Fred Stern & Co., Inc.	114,240	
Charles T. Wilson Co., Inc.	67,200	
H. A. Astlett & Co.	392,000	
Various	*492	1,744,242
JULY 9. By "Tarantia," London.		
Various	15,020	15,020
JULY 9. By "Noordam," Rotterdam.		
H. Muehlstein & Co., Inc.	100,800	
Various	24,300	125,100
JULY 9. By "Maine," London.		
L. Littlejohn & Co., Inc.	112,000	
Various	20,480	132,480
JULY 9. By "Amur Maru," Far East.		
Poel & Kelly, Inc.	1,085,625	
Baird Rubber & Trading Co.	123,200	
L. Littlejohn & Co., Inc.	273,280	
H. A. Astlett & Co.	34,000	
Various	†680	
Various	779,795	2,296,580
JULY 11. By "President Adams," London.		
Meyer & Brown, Inc.	62,600	62,600
JULY 13. By "West Prospect," Singapore.		
Poel & Kelly, Inc.	‡89,600	
Fred Stern & Co., Inc.	‡44,800	134,400
JULY 13. By "Bellerophon," Far East.		
Poel & Kelly, Inc.	395,980	
Baird Rubber & Trading Co.	179,200	
General Rubber Co.	698,325	
Hood Rubber Co.	*11,244	
Hood Rubber Co.	22,490	
L. Littlejohn & Co., Inc.	2,688,000	
Meyer & Brown, Inc.	224,000	
H. Muehlstein & Co., Inc.	123,200	
Fred Stern & Co., Inc.	183,290	
Charles T. Wilson Co., Inc.	179,200	
H. A. Astlett & Co.	90,000	
Various	3,822,879	7,807,860
JULY 14. By "Rotterdam," Rotterdam.		
L. Littlejohn & Co., Inc.	592,592	
H. Muehlstein & Co., Inc.	107,520	700,112
JULY 15. By "Karroo," Far East.		
Baird Rubber & Trading Co.	190,400	
General Rubber Co.	452,480	
Hood Rubber Co.	*112,218	
L. Littlejohn & Co., Inc.	1,863,680	
Meyer & Brown, Inc.	56,000	
Schafer & Meyer	56,600	
Fred Stern & Co., Inc.	439,120	
Charles T. Wilson Co., Inc.	302,400	
Poel & Kelly, Inc.	*16,240	
Poel & Kelly, Inc.	472,343	
H. A. Aslett & Co.	90,000	
Various	*105,260	
Various	3,513,357	7,670,598
JULY 15. By "Palembang," Far East.		
Poel & Kelly, Inc.	325,535	
General Rubber Co.	44,800	
L. Littlejohn & Co., Inc.	705,600	
Meyer & Brown, Inc.	168,000	
Fred Stern & Co., Inc.	203,868	
Charles T. Wilson Co., Inc.	22,400	
Various	1,799,317	3,269,520
JULY 15. By "Calcutta Maru," Far East.		
Baird Rubber & Trading Co.	22,400	
General Rubber Co.	168,000	
L. Littlejohn & Co., Inc.	123,200	
Meyer & Brown, Inc.	392,000	
Various	60,660	766,260

‡Arrived at Los Angeles.
†Arrived at San Francisco.
*Arrived at Boston.

Africans

JULY 17. By "Zarembo," France.		
Baird Rubber & Trading Co.	11,200	11,200

Centrals

JUNE 29. By "Carillo," from Colombia.		
G. Amsinck & Co., Inc.	198	198

Pontianak

JUNE 23. By "Eurybates," Soerabaya.		
Various	84,000	84,000
JUNE 23. By "City of Oran," Far East.		
L. Littlejohn & Co., Inc.	212,000	212,000
JUNE 25. By "M. S. Dollar," Far East.		
Various	74,700	74,700
JULY 9. By "Kendal Castle," Far East.		
L. Littlejohn & Co., Inc.	68,000	
Various	124,900	192,900
JULY 9. By "Amur Maru," Singapore.		
Various	300	300
JULY 13. By "Bellerophon," Far East.		
L. Littlejohn & Co., Inc.	34,000	
Various	10,400	44,400
JULY 15. By "Karroo," Far East.		
Various	80,700	80,700
JULY 15. By "Palembang," Far East.		
L. Littlejohn & Co., Inc.	204,000	204,000

Gutta Siak

JUNE 22. By "City of Oran," Singapore.		
L. Littlejohn & Co., Inc.	224,000	224,000
JULY 9. By "Amur Maru," Singapore.		
JULY 13. By "Bellerophon," Far East.		
L. Littlejohn & Co., Inc.	112,000	112,000
Various	24,000	24,000
JULY 15. By "Palembang," Far East.		
Various	309,300	309,300

Gutta Percha

JUNE 22. By "City of Oran," Singapore.		
L. Littlejohn & Co., Inc.	2,000	2,000
JUNE 23. By "Eurybates," Soerabaya.		
L. Littlejohn & Co., Inc.	78,400	78,400
JUNE 25. By "M. S. Dollar," Singapore.		
Fred Stern & Co., Inc.	11,200	11,200
JULY 10. By "Kendal Castle," Singapore.		
L. Littlejohn & Co., Inc.	56,000	56,000
JULY 15. By "Karroo," Far East.		
Fred Stern & Co., Inc.	44,361	
Various	7,239	51,600
JULY 15. By "Palembang," Far East.		
Various	309,300	309,300
JULY 19. By "Bendu," Africa.		
Fred Stern & Co., Inc.	22,400	22,400

Balata

JUNE 18. By "Pastores," Cristobal.		
Various	1,950	1,950
JUNE 27. By "W. M. Tupper," St. Laurent.		
Various	8,700	8,700
JULY 6. By "Cuthbert," Iquitos.		
Ultramares Corporation	25,835	25,835
JULY 6. By "Maraval," Trinidad.		
Various	40,200	40,200
JULY 12. By "Amazone," Port au Prince.		
Various	5,700	5,700
JULY 13. By "Metapan," Puerto Colombia.		
Various	4,800	4,800
JULY 16. By "Dominic," Pará.		
General Rubber Co.	4,480	4,480
JULY 17. By "Martinique," Guayaquil.		
Various	300	300
JULY 17. By "Panama," Panama.		
Various	1,950	1,950
JULY 17. By "Almagro," Guayaquil.		
Various	4,950	4,950

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	May 1921 Pounds	May 1921 Value	May 1922 Pounds	May 1922 Value
UNMANUFACTURED—*free*				
India rubber				
From France	.....	.....	.....	.....
Netherlands	494,415	$95,660	22,400	$4,480
Portugal	10,761	1,038	.....	.....
United Kingdom	1,320,499	205,692	902,455	142,958
Canada	226,357	102,555	1,818	92
Central America	.....	.....	.....	.....
Mexico	.....	.....	77,000	15,400
Brazil	3,718,340	394,466	2,095,377	259,417
Peru	8,541	939	.....	.....
Other South America	454	104	.....	.....
British East Indies	14,596,314	2,626,236	27,069,995	4,089,164
Dutch East Indies	3,515,157	645,231	5,280,064	888,531
Other countries	.....	.....	277,949	27,655
Totals	23,890,838	$4,071,921	35,727,058	$5,427,697
Balata	76,506	45,679	84,895	44,508
Jelutong (Pontianak)	70,336	3,097	824,917	75,291
Gutta percha	165,200	28,170	210,469	45,912
Guayule	75,020	15,004	62,300	12,460
Rubber scrap	252,311	7,531	159,362	5,005
Totals, unmanufactured	24,530,211	$4,171,402	37,069,001	$5,610,873
Chicle *dutiable*	556,658	293,626	665,902	315,876
MANUFACTURED—*dutiable*				
India rubber and gutta percha	.....	$77,853	.....	$154,280
India rubber substitutes	242	30	.....	.....

Exports of Domestic Merchandise

MANUFACTURED				
India rubber				
Reclaimed	206,123	$25,772	144,401	$15,494
Scrap and old	537,450	22,678	823,762	30,577
Footwear				
Boots[1] *pairs*	10,004	26,920	25,408	73,664
Shoes[1] *pairs*	147,567	160,406	42,291	45,449
Canvas shoes with rubber soles[1] *pairs*	.....	.....	232,952	192,939
Druggists' rubber sundries[1]	.....	45,297	75,893	84,714
Hard rubber goods				
Battery jars and accessories[1]	.....	.....	23,949	8,753
Other electrical supplies[1]	.....	.....	8,034	6,063
Other hard rubber goods[1]	.....	.....	29,141	28,112
Tires				
Pneumatic casings				
For automobiles[1] *number*	.....	941,862	131,573	1,701,150
Other[1]	.....	.....	5,510	22,868
Pneumatic tubes				
For automobiles[1]	.....	95,243	89,017	162,318
Other[1]	.....	.....	3,930	5,046
Solid tires				
For automobiles and motor trucks[1]	.....	108,746	4,727	127,807
Other[1]	.....	.....	70,406	21,904
All other tires[1]	.....	25,208	.....	.....
Tire repair materials[1]	.....	.....	87,520	31,620
Belting[1]	.....	112,519	206,843	88,465
Hose[1]	.....	113,667	323,150	110,097
Packing[1]	.....	37,868	98,257	48,543
Soles and heels[1]	.....	35,564	144,322	58,615
Thread[1]	.....	.....	100,369	111,610
Other rubber manufactures[1]	.....	327,436	507,793	260,239
Totals, manufactured	.....	$2,079,186	.....	$3,236,047

Exports of Foreign Merchandise

UNMANUFACTURED				
India rubber	930,283	$206,139	610,369	$91,834
Balata	19,637	7,305	33,271	19,759
Jelutong (Pontianak)	42,000	5,231	.....	.....
Totals, unmanufactured	991,920	$218,675	643,640	$111,593
MANUFACTURED				
Gutta percha and india rubber	.....	$2,919	.....	$14
India rubber substitutes	.....	.....	.....	.....
Totals, manufactured	.....	$2.919	.....	$14
Chicle	50,200	22,590	360	206

[1]Details of exports of domestic mechandise by countries during May, 1922, appear in this issue.

A JOINT CONVENTION OF THE INTERSTATE OIL MILL SUPERINTENDENTS' Association and the Oil Mill Superintendents Exhibitors' Association was recently held at Atlanta, Georgia. Among the exhibitors on this occasion was The Morse Chain Co., Ithaca, New York.

Custom House Statistics

New York

Imports

	May 1921 Pounds	May 1921 Value	May 1922 Pounds	May 1922 Value
UNMANUFACTURED—*free*				
Crude rubber				
From Belgium	.....	.....	6,769	$998
Netherlands	494,415	$95,660	22,400	4,480
Portugal	10,761	1,038	.....	.....
England	1,320,499	205,692	902,455	142,958
Brazil	3,718,340	394,466	2,095,377	259,417
Colombia	234	59	.....	.....
Peru	8,541	939	.....	.....
Venezuela	220	45	.....	.....
China	.....	.....	134,400	17,416
British India	201,600	27,518	.....	.....
Straits Settlements	10,498,899	2,020,668	26,554,795	4,017,140
British East Indies	3,506,421	510,128	.....	.....
Dutch East Indies	3,515,157	645,231	2,615,034	422,856
Trinidad	.....	.....	600	78
Java	.....	.....	2,620,735	456,384
Hongkong	.....	.....	110,000	5,498
Totals	23,275,087	$3,901,444	35,062,565	$5,327,225
Balata	76,506	45,679	84,895	44,508
Jelutong (Pontianak)	70,336	3,097	38,343	75,291
Gutta percha	165,200	28,170	192,526	29,461
Totals	23,587,129	$3,978,390	35,378,329	$5,476,485
Rubber, scrap and reclaimed	.....	.....	69,284	2,977
Totals, unmanufactured	23,587,129	$3,978,390	35,447,613	$5,479,462
MANUFACTURED				
Manufactures of rubber and gutta percha *dutiable*	.....	$48,880	.....	$110,713
Rubber substitutes *dutiable*	242	30	.....	.....
Chicle *dutiable*	122,006	60,037	252,987	126,106

Exports

MANUFACTURED				
Rubber, scrap and reclaimed	333,715	$18,709	516,429	$23,165
Automobile and other tires, *number*	.....	605,609	138,013	1,377,987
Inner tubes *number*	.....	49,498	68,545	121,901
Tire repair materials	.....	.....	57,210	21,246
Boots and shoes *pairs*	111,463	127,558	46,672	81,552
Canvas shoes with rubber soles *pairs*	.....	.....	120,694	105,081
Soles and heels	.....	21,120	84,176	39,931
Battery jars and accessories	.....	.....	3,950	837
Other electrical supplies	.....	.....	3,811	3,060
Other hard rubber goods	.....	.....	17,065	14,835
Druggists' rubber sundries	.....	27,642	56,422	63,444
Belting, hose, and packing	.....	199,609	416,800	155,284
Thread	.....	.....	59,899	74,860
Other rubber manufactures	.....	150,385	183,219	128,924
Totals, manufactured	.....	$1,200,130	.....	$2,212,107

Foreign Exports

Crude rubber	34,000	$3,304	2,650	$1,200
Balata	19,637	7,305	33,271	19,759
Gutta percha	.....	.....	.....	.....
Rubber, scrap and reclaimed	6,720	672	.....	.....
Rubber manufactures	.....	438	.....	.....
Chicle	.....	.....	360	206

Imports of Crude Rubber into the United States by Customs Districts

	June, 1921 Pounds	June, 1921 Value	June, 1922 Pounds	June, 1922 Value
Massachusetts	329,590	$31,165	348,225	$41,854
New York	33,479,406	5,605,708	48,211,564	7,023,176
Maryland	227,500	99,769	897,798	129,822
San Diego	33,099	15,612	.....	.....
Los Angeles	172,950	27,544	945,209	142,134
San Francisco	207,213	28,558	23,585	3,781
Oregon	11,470	4,077	368,843	56,020
Washington	118,720	14,795	.....	.....
Colorado	44,800	4,589	156,800	25,327
Totals	34,624,748	$5,831,817	50,952,024	$7,422,114

Plantation Rubber Exports from Malaya

	January 1 to May 31, 1922 Singapore Pounds	Malacca Pounds	Penang Pounds	January 1 to June 15, 1922 Port Swettenham Pounds	Totals Pounds
To United Kingdom	2,246,500	5,182,600	1,868,600	7,306,410	16,604,110
The Continent	10,438,200	627,700	1,750,200	432,099	13,248,199
Japan	12,166,700	.....	56,000	.....	12,222,700
United States	125,263,200	14,567,000	12,015,700	1,683,818	153,529,718
British Possessions	3,477,100	.....	.....	347,989	3,825,089
Other countries	180,200	.....	.....	.....	180,200
Totals	153,771,900	20,377,300	15,690,500	9,770,316	199,610,016

Exports of India Rubber Manufactures from the

EXPORTED TO—	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Leather Cloth or Artificial Leather Value	Waterproofed and Auto Cloth and Auto Topping Value
EUROPE													
Azores and Madeira Islands	.....	.....	.....	.....	6	$20	.....	.....	.....	.....	.....	.....	.....
Belgium	.....	$1,208	$3,725	$2,487	.....	.....	.....	.....	.....	.....	$26	$4,717	$3,763
Bulgaria	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Denmark	.....	12	1,251	.....	.....	.....	.....	.....	6,494	$4,960	.....	1,226	7,828
Esthonia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Finland	$7,665	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	145	.....
France	2,650	304	1,242	31,527	24	29	237	$354	.....	.....	103	39,657	2,497
Gibraltar	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Greece	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hungary	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iceland and Faroe Islands	.....	.....	.....	.....	463	1,749	1,051	920	.....	.....	.....	.....	.....
Italy	.....	207	.....	7,046	144	436	.....	.....	240	173	.....	769	1,150
Jugoslavia, Albania, etc	.....	.....	.....	.....	.....	.....	3,024	7,000	.....	.....	.....	.....	.....
Latvia	.....	22	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lithuania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Malta, Gozo, and Cyprus Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Netherlands	430	2,323	13	.....	.....	.....	.....	.....	672	904	.....	900	1,033
Norway	160	319	.....	.....	.....	.....	593	652	3,474	2,582	72	1,518	637
Poland and Danzig	732	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portugal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	884	.....
Rumania	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spain	.....	.....	18	5,966	.....	.....	.....	.....	.....	.....	221	11,020	286
Sweden	1,312	2,395	144	.....	326	1,359	704	1,580	192	507	60	10,669	452
Switzerland	1,727	.....	.....	2,187	.....	.....	102	93	.....	.....	.....	1,487	.....
Turkey in Europe	.....	2,054	.....	.....	.....	.....	.....	.....	.....	.....	581	.....	.....
England	2,905	16,289	2,683	47,443	719	2,040	46	49	35,110	26,788	1,992	6,122	4,413
Scotland	.....	245	263	.....	.....	.....	.....	.....	.....	.....	.....	6,836	.....
Ireland	.....	.....	.....	.....	12	26	.....	.....	.....	.....	.....	.....	.....
TOTALS, EUROPE	$17,581	$25,378	$9,339	$96,656	1,694	$5,659	5,757	$10,648	46,182	$35,914	$3,055	$85,950	$22,059
NORTH AMERICA													
Canada—Maritime Provinces	$1,722	$398	$17	.....	166	$511	.....	.....	51	$198	.....	.....	$75
Quebec and Ontario	16,022	12,375	4,152	$1,418	20	59	12	$35	1,816	2,322	$689	$26,038	17,089
Prairie Provinces	8	360	244	.....	.....	.....	.....	.....	48	78	.....	164	274
Brit. Columbia and Yukon	1,495	1,201	514	.....	460	1,639	431	1,562	.....	.....	.....	726	66
British Honduras	.....	178	.....	.....	36	117	710	834	.....	.....	25	.....	.....
Costa Rica	.....	1,202	30	.....	.....	.....	.....	.....	132	395	.....	98	168
Guatemala	25	45	80	.....	.....	.....	.....	.....	739	656	267	165	11
Honduras	64	1,531	355	23	.....	.....	.....	.....	1,046	1,180	917	.....	130
Nicaragua	25	36	.....	.....	.....	.....	.....	.....	988	1,078	744	.....	49
Panama	127	2,403	77	.....	.....	.....	.....	.....	7,319	5,663	2,088	.....	115
Salvador	437	47	145	97	.....	.....	.....	.....	1,100	935	1,932	.....	140
Mexico	10,724	14,701	6,879	.....	107	723	1,258	1,603	16,310	13,951	8,958	4,821	1,854
Miquelon and St. Pierre Islands	.....	.....	13	.....	1,008	3,039	.....	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador	406	307	207	.....	2,922	9,435	419	614	3,566	2,781	175	.....	.....
Bermuda	140	161	.....	.....	3	10	10	7	1,845	3,025	124	85	155
Barbados	.....	6	108	.....	.....	.....	.....	.....	168	148	.....	.....	.....
Jamaica	.....	511	.....	.....	.....	.....	.....	.....	3,958	3,665	510	998	573
Trinidad and Tobago	335	143	570	.....	.....	.....	.....	.....	2,839	2,206	222	173	1,646
Other British West Indies	77	2,133	.....	.....	.....	.....	168	120	1,069	1,219	136	.....	.....
Cuba	870	4,921	1,288	.....	.....	.....	756	627	45,477	32,311	11,590	3,093	2,952
Dominican Republic	.....	61	.....	.....	.....	.....	288	214	1,807	1,765	267	.....	463
Dutch West Indies	.....	16	.....	.....	.....	.....	.....	.....	1,864	1,565	101	.....	51
French West Indies	96	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	65	.....
Haiti	.....	.....	43	.....	.....	.....	.....	.....	264	312	194	192	261
Virgin Islands of United States	.....	.....	.....	.....	.....	.....	.....	.....	520	709	116	1	.....
TOTALS, NORTH AMERICA	$32,582	$42,736	$14,722	$1,538	4,722	$15,533	4,052	$5,616	92,926	$76,162	$29,055	$36,619	$26,072
SOUTH AMERICA													
Argentina	.....	$1,426	$471	.....	.....	.....	1,416	$1,500	7,532	$9,258	$3,698	$3,266	$14,138
Bolivia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,712
Brazil	$2,062	3,448	339	.....	36	$140	.....	.....	.....	.....	279	1,294	1,678
Chile	224	172	515	.....	.....	.....	1,000	1,000	.....	.....	775	2,292	409
Colombia	.....	2,711	.....	.....	.....	.....	625	461	52	63	5,003	513	237
Ecuador	.....	507	262	.....	.....	.....	.....	.....	.....	.....	252	369	558
British Guiana	.....	.....	75	.....	.....	.....	24	13	7,660	6,917	.....	.....	127
Dutch Guiana	.....	.....	.....	.....	.....	.....	.....	.....	144	133	.....	.....	.....
Paraguay	706	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Peru	675	4,460	245	.....	284	821	.....	.....	.....	.....	61	1,864	490
Uruguay	.....	162	29	.....	.....	.....	1,750	1,449	4,920	3,886	1,195	.....	122
Venezuela	912	306	493	.....	6	29	.....	.....	.....	.....	490	728	.....
TOTALS, SOUTH AMERICA	$4,579	$13,192	$2,429	.....	326	$990	4,815	$4,423	20,308	$20,257	$11,753	$10,326	$19,471
OCEANIA													
Philippine Islands	$1,640	$1,725	$931	.....	.....	.....	150	$51	64,879	$52,406	$10,138	$856	$600
Australia	1,775	724	5,111	.....	.....	.....	.....	.....	.....	.....	.....	11,957	5,515
British Oceania	.....	.....	.....	.....	.....	.....	204	192	816	678	.....	.....	.....
French Oceania	.....	81	30	.....	.....	.....	.....	.....	608	635	.....	.....	25
New Zealand	1,700	93	398	.....	1,594	$6,487	1,436	2,865	.....	.....	.....	1,842	2,157
Other Oceania	.....	.....	.....	.....	.....	.....	.....	.....	210	405	.....	.....	.....
TOTALS, OCEANIA	$5,115	$2,623	$6,470	.....	1,594	$6,487	1,790	$3,108	66,513	$54,124	$10,138	$14,655	$8,297
ASIA													
Aden	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Armenia and Kurdistan	$517	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British India	1,985	$2,542	$280	.....	.....	.....	48	$24	984	$1,247	.....	$567	.....
Ceylon	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Straits Settlements	.....	.....	.....	.....	.....	.....	.....	.....	503	444	.....	.....	.....
China	.....	38	346	.....	74	$79	662	483	241	210	.....	3,558	$5,115
Chosen	.....	25	.....	.....	.....	.....	.....	.....	288	246	.....	.....	.....
Java and Madura	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	327	.....
Other Dutch East Indies	245	37	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Far Eastern Republic	.....	.....	.....	.....	192	1,077	.....	.....	.....	.....	.....	.....	.....
French Indo-China	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hongkong	.....	27	697	.....	.....	.....	24	66	48	33	.....	382	50
Japan	.....	95	10,035	$13,416	16,260	42,256	23,006	19,098	3,326	2,497	.....	2,222	791
Kwangtung, leased territory	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Palestine and Syria	.....	64	.....	.....	.....	.....	.....	.....	.....	.....	.....	410	75
Persia	.....	.....	.....	.....	.....	.....	300	360	.....	.....	.....	.....	.....
Siam	135	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	351	.....
TOTALS, ASIA	$2,922	$2,828	$11,358	$13,416	16,526	$43,412	24,040	$20,031	5,390	$4,677	.....	$7,817	$6,031

United States by Countries During May, 1922

Waterproofed Clothing Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Solid Tires: Automobile Value	Solid Tires: Others Value	Pneumatic Tubes: Automobile Number	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Tire Repair Materials Value	Druggists' Rubber Sundries Value	Hard Rubber Goods: Battery Jars and Accessories Value	Hard Rubber Goods: Other Electrical Supplies Value	Hard Rubber Goods: Others Value	All Other Rubber Manufactures Value	Totals Value
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	$20
.....	532	$7,946	.....	.....	.....	57	$158	.....	$231	$3,581	.....	.....	.....	$868	28,710
.....	4	170	.....	.....	.....	8	31	.....	.....	.....	.....	.....	.....	.....	201
.....	4,452	65,554	$324	$1,541	.....	2,036	3,967	$156	180	932	.....	.....	.....	1,361	89,292
.....	54	1,164	.....	974	.....	71	184	.....	.....	.....	.....	.....	.....	.....	2,322
.....	253	3,736	150	217	.....	281	1,934	.....	132	.....	.....	.....	.....	.....	13,979
.....	2,367	27,835	139	.....	$92	25	52	67	694	4,932	.....	.....	$2,101	12,569	126,844
.....	16	270	.....	.....	.....	12	35	.....	.....	.....	.....	.....	.....	.....	305
.....	271	3,538	.....	.....	.....	295	493	.....	.....	.....	.....	.....	.....	.....	4,031
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	463
.....	266	4,289	.....	.....	.....	277	520	.....	.....	.....	.....	.....	.....	463	7,478
.....	490	7,707	377	.....	.....	22	93	.....	.....	.....	.....	.....	.....	.....	18,688
.....	272	3,982	.....	.....	.....	346	1,668	.....	.....	.....	.....	.....	.....	730	12,650
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	22
.....	150	1,806	.....	.....	.....	308	418	.....	.....	.....	.....	.....	.....	.....	2,224
.....	15	208	.....	.....	.....	16	33	.....	.....	.....	.....	.....	.....	.....	241
.....	1,453	22,324	327	778	.....	601	1,163	.....	.....	285	.....	.....	.....	.....	31,998
.....	2,704	48,666	500	2,325	.....	1,989	5,271	375	128	.....	.....	.....	.....	1,518	64,454
.....	14	306	.....	.....	.....	12	20	.....	.....	.....	.....	.....	.....	1,249	1,058
.....	1,208	18,884	.....	1,378	.....	277	385	370	.....	.....	.....	.....	.....	.....	22,216
.....	6	201	.....	.....	.....	10	28	.....	.....	.....	.....	.....	.....	315	229
.....	5,092	72,206	765	7,642	.....	3,382	6,448	206	1,728	197	.....	.....	.....	.....	117,232
.....	4,801	70,289	.....	750	.....	2,808	7,230	.....	3,013	.....	$347	.....	.....	10,529	101,396
.....	134	2,774	75	.....	.....	60	160	.....	.....	.....	.....	.....	.....	1,289	10,207
.....	357	4,276	.....	.....	.....	248	392	.....	13	.....	.....	.....	.....	1,704	7,316
$225	36,755	367,866	7,462	11,058	.....	13,759	20,064	623	1,978	36,821	.....	$882	11,975	75,681	645,144
.....	46	561	1,250	.....	.....	36	125	160	155	1,484	.....	.....	.....	254	11,498
.....	1,107	15,812	.....	.....	.....	1,040	1,788	.....	.....	.....	.....	.....	.....	.....	17,626
$225	62,819	$752,370	$11,369	$26,663	$92	27,974	$52,660	$1,907	$8,252	$48,232	$347	$882	$14,076	$108,530	$1,337,844
$1,056	28	$396	$32	.....	$19	92	$160	.....	$29	$246	$7	$9	$143	$2,953	$7,971
3,170	7,105	130,129	1,533	$27,342	889	6,462	14,083	$276	5,024	9,801	7,504	2,864	9,914	93,593	386,321
173	203	2,332	10	322	.....	175	244	.....	172	2,921	155	71	1,051	3,343	11,922
163	30	937	.....	348	.....	28	61	.....	.....	515	66	.....	833	2,483	12,609
36	29	200	.....	.....	.....	42	78	4	15	4	.....	.....	.....	.....	1,491
212	82	1,252	.....	.....	.....	66	231	.....	.....	71	.....	.....	.....	118	3,777
.....	95	2,480	39	.....	1,853	99	275	4	.....	84	.....	.....	125	29	6,138
233	71	1,877	.....	.....	144	58	181	.....	6	47	.....	12	.....	279	6,979
.....	21	363	.....	.....	16	68	121	.....	.....	132	.....	.....	.....	198	2,762
228	594	9,068	28	858	45	430	697	.....	97	276	165	.....	40	1,760	23,735
115	74	1,819	.....	.....	.....	248	571	.....	22	81	.....	.....	.....	67	6,408
10,471	6,495	85,218	2,485	8,013	1,151	3,965	8,312	132	840	559	.....	12	897	6,788	189,092
658	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	18	3,728
3,525	93	1,742	.....	.....	.....	74	159	.....	12	121	.....	.....	.....	1,162	20,634
.....	.....	.....	78	.....	203	.....	.....	.....	.....	65	.....	.....	.....	19	4,084
.....	22	437	.....	38	.....	60	117	.....	.....	.....	.....	.....	.....	.....	854
.....	639	9,076	136	1,072	63	388	636	.....	.....	141	135	.....	.....	205	17,721
.....	394	4,876	.....	424	.....	294	559	.....	88	.....	.....	13	.....	62	11,317
.....	76	868	60	.....	.....	79	191	.....	5	.....	.....	35	.....	19	4,868
11,458	9,421	101,719	699	24,525	344	13,623	21,581	43	2,780	5,591	37	.....	160	7,757	234,365
36	870	10,774	235	.....	27	1,094	1,874	40	47	236	.....	.....	.....	581	16,590
.....	24	392	24	.....	.....	77	179	24	.....	24	.....	.....	.....	65	2,441
345	246	3,334	.....	570	46	115	301	.....	.....	.....	.....	.....	.....	72	4,829
.....	206	3,187	.....	.....	157	211	341	.....	46	3	.....	.....	.....	20	4,763
.....	26	327	.....	37	.....	.....	.....	.....	16	.....	.....	.....	.....	11	1,217
$31,894	26,844	$372,803	$5,359	$63,549	$4,957	27,748	$50,952	$523	$9,199	$20,918	$8,069	$3,016	$13,163	$121,581	$986,618
$362	7,893	$92,231	$162	$627	.....	10,197	$14,494	.....	$3,305	$4,228	.....	$76	.....	$5,267	$154,509
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	99	1,811
.....	4,110	47,275	.....	775	.....	1,850	2,312	$1,176	.....	262	.....	.....	$153	558	61,751
.....	236	3,751	.....	.....	.....	330	864	.....	1,296	125	.....	.....	62	1,836	13,321
.....	483	8,985	75	271	$155	510	1,241	.....	66	324	$180	.....	.....	822	21,107
.....	350	6,657	60	200	.....	291	691	.....	.....	104	.....	.....	.....	82	9,742
.....	34	608	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	49	7,789
.....	23	289	.....	.....	.....	62	101	.....	7	.....	.....	.....	.....	.....	530
741	8	60	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	766
897	862	12,520	.....	645	.....	614	1,266	.....	313	5	.....	.....	.....	.....	25,317
300	1,555	20,592	.....	.....	.....	348	440	.....	1,326	90	.....	601	165	445	31,069
	875	13,438	12	680	103	1,094	2,022	10	656	156	.....	.....	.....	881	21,263
$2,300	16,431	$206,406	$309	$3,198	$258	15,296	$23,431	$1,186	$6,969	$5,294	$180	$705	$380	$10,939	$348,975
$580	4,327	$64,201	$979	$6,312	$13,870	4,387	$8,787	$501	$54	$2,843	.....	.....	.....	$1,541	$168,015
.....	2,403	47,395	846	6,348	448	1,111	2,465	.....	1,185	2,181	.....	.....	$260	4,786	90,996
24	28	480	.....	206	.....	12	27	.....	85	.....	.....	.....	.....	.....	1,668
.....	27	537	159	184	217	20	44	71	13	.....	.....	.....	19	6	2,045
.....	4,792	71,381	.....	4,861	140	2,071	4,501	77	2,584	872	$89	$39	30	1,965	102,081
.....	44	522	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	927
$604	11,621	$184,516	$1,984	$17,911	$14,675	7,601	$15,824	$649	$3,921	$5,896	$89	$39	$309	$8,298	$365,732
.....	56	$715	.....	.....	.....	36	$78	.....	.....	.....	.....	.....	.....	.....	$793
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	517
.....	350	6,306	.....	$9,609	.....	.....	.....	.....	.....	.....	.....	.....	.....	$347	22,907
.....	60	865	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	865
.....	762	8,135	.....	2,487	$1,856	139	285	.....	$228	.....	.....	.....	.....	390	13,825
.....	259	4,613	.....	.....	.....	257	1,124	.....	890	$1,083	.....	.....	.....	420	17,959
.....	4	66	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	337
.....	1,527	23,054	.....	.....	.....	525	706	.....	.....	.....	.....	.....	.....	.....	24,127
.....	74	761	.....	.....	.....	32	52	.....	.....	.....	.....	.....	.....	.....	1,095
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1,077
.....	32	350	.....	.....	.....	.....	.....	$40	.....	.....	.....	.....	.....	.....	390
$734	74	1,350	.....	.....	.....	41	94	.....	160	245	.....	.....	.....	.....	4,459
40	855	13,167	.....	2,142	66	200	549	503	225	2,058	$68	$1,421	$184	621	115,932
.....	2	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5,099	100
.....	987	10,644	.....	.....	.....	825	1,587	.....	80	65	.....	.....	.....	.....	12,925
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	360
.....	60	921	.....	.....	.....	60	145	.....	.....	.....	.....	.....	.....	.....	1,552
$774	5,102	$71,047	.....	$14,238	$1,922	2,115	$4,620	$543	$1,583	$3,451	$68	$1,421	$184	$6,877	$219,398

Exports of India Rubber Manufactures from the United

AFRICA	Belting Value	Hose Value	Packing Value	Thread Value	Boots Pairs	Boots Value	Shoes Pairs	Shoes Value	Canvas Shoes with Rubber Soles Pairs	Canvas Shoes with Rubber Soles Value	Soles and Heels Value	Leather Cloth or Artificial Leather Value	Waterproofed and Auto Cloth and Auto Topping Value
British West Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
British South Africa	$25,231	$23,326	$3,208	.....	546	$1,583	1,837	$1,623	1,633	$1,805	$4,614	$6,028	$2,627
British East Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	342
Canary Islands	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	82	.....
Egypt	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	296	.....
Other French Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Liberia	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morocco	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Portuguese East Africa	455	.....	1,017	.....	.....	.....	.....	.....	.....	.....	.....	235	.....
Other Portuguese Africa	.....	14	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spanish Africa	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
TOTALS, AFRICA	$25,686	$23,340	$4,225	.....	546	$1,583	1,837	$1,623	1,633	$1,805	$4,614	$6,641	$2,969
GRAND TOTALS	$88,465	$110,097	$48,543	$111,610	25,408	$73,664	42,291	$45,449	232,952	$192,939	$58,615	$162,008	$84,899

Compiled by the Bureau of Foreign Commerce, Department of Commerce, Washington, D. C.

United Kingdom Rubber Statistics

Imports

UNMANUFACTURED	May 1921 Pounds	May 1921 Value	May 1922 Pounds	May 1922 Value
Crude rubber From—				
Straits Settlements	5,149,200	£240,642	3,048,600	£125,726
Federated Malay States	4,839,000	240,021	5,705,500	259,265
British India	996,900	48,503	738,800	33,274
Ceylon and Dependencies	2,526,000	124,019	950,700	41,359
Other Dutch Possessions in Indian Seas	929,600	47,208	332,300	16,118
Dutch East Indies (except other Dutch Possessions in Indian Seas)	2,153,500	115,490	1,373,400	59,978
Other countries in East Indies and Pacific, not elsewhere specified	247,900	12,035	513,100	20,652
Brazil	177,100	7,617	996,500	35,338
Peru	5,600	270	....	....
South and Central America (except Brazil and Peru)	5,000	250	4,700	195
West Africa				
French West Africa	22,400	746	....	....
Gold Coast	22,800	1,320	200	8
Other parts of West Africa	14,900	671	12,900	477
East Africa (including Madagascar)	56,600	1,920	....	....
Other countries	2,200	105	30,600	1,340
Totals	17,148,700	£840,817	13,707,300	£593,730
Waste and reclaimed rubber	6,300	71	113,900	2,096
Gutta percha and balata	37,700	67,128	257,300	30,252
Rubber substitutes	....	....	2,000	95
Totals, unmanufactured	17,192,700	£908,016	14,080,500	£626,173
MANUFACTURED				
Boots and shoes..*dozen pairs*	5,239	£14,155	15,562	£29,130
Waterproof clothing...*number*	62	110	473	426
Insulated wire	....	1,114	....	10,565
Submarine cables	....	....	....	....
Tires and tubes....*number*	89,984	374,058	377,902	460,783
Other rubber manufactures	....	41,209	....	93,631
Totals, manufactured...	....	£430,646	....	£594,535

Exports

UNMANUFACTURED	May 1921 Pounds	May 1921 Value	May 1922 Pounds	May 1922 Value
Waste and reclaimed rubber	320,200	£9,933	234,600	£4,757
Rubber substitutes	800	22	135,400	2,651
Totals, unmanufactured	321,000	£9,955	370,000	£7,408
MANUFACTURED				
Boots and shoes..*dozen pairs*	6,640	£15,700	10,929	£19,073
Waterproof clothing, *number*	23,253	36,088	76,499	90,337
Insulated wire	....	112,239	....	50,277
Submarine cables	....	807,090	....	25,765
Tires and tubes ....*number*	196,570	137,434	213,709	180,930
Other rubber manufactures	....	139,409	....	216,579
Totals, manufactured..	....	£1,247,960	....	£582,961

Exports—Colonial and Foreign

UNMANUFACTURED	May 1921 Pounds	May 1921 Value	May 1922 Pounds	May 1922 Value
Crude rubber				
To Russia	....	£....	29,700	£1,368
Sweden, Norway and Denmark	172,500	13,605	105,800	3,830
Germany	1,165,900	38,524	1,869,400	71,864
Belgium	126,900	4,640	212,500	7,690
France	645,700	27,063	2,291,100	87,088
Spain	9,100	447	160,400	5,921
Italy	51,700	2,350	590,800	22,016
Austria	130,300	3,291	....	....
Other European countries	250,600	5,818	338,400	16,628
United States	942,500	41,629	1,537,000	54,388
Canada	15,700	1,020	134,600	4,562
Other countries	28,500	1,526	53,700	2,730
Totals	3,539,400	£139,913	7,323,400	£278,085
Waste and reclaimed rubber	....	....	11,200	408
Gutta percha and balata	36,800	6,888	120,900	17,379
Rubber substitutes	.....	....	....	....
Totals, unmanufactured	3,576,200	£146,801	7,455,500	£295,872
MANUFACTURED				
Boots and shoes..*dozen pairs*	28	£79	237	£1,473
Waterproof clothing, *number*	....	....	....	....
Insulated wire	....	....	....	....
Submarine cable	....	....	....	....
Tires and tubes.....number	14,164	27,750	14,995	26,800
Other manufactures	....	2,639	....	4,380
Totals, manufactured..	....	£30,468	....	£32,653

Rubber Statistics for the Dominion of Canada

Imports of Crude and Manufactured Rubber

UNMANUFACTURED—*free*	April 1921 Pounds	April 1921 Value	April 1922 Pounds	April 1922 Value
Rubber, gutta percha, etc.				
From United Kingdom	.....	.....	484,245	$80,891
United States	1,049,015	$174,921	1,079,737	169,121
Belgium	9,682	1,783	.....	.....
Brazil	70,400	12,667	.....	.....
British East Indies				
India	.....	.....	11,900	1,904
Ceylon	478,035	167,949	560,000	110,783
Straits Settlements	728,020	169,860	190,152	40,406
Dutch East Indies	.....	.....	45,745	9,120
Total	2,335,152	$527,180	2,371,779	$412,225
Rubber, recovered	**27,365**	**2,344**	**40,619**	**3,934**
Rubber, powdered, and rubber or gutta percha scrap	134,620	9,118	102,671	6,692
Balata	.....	.....	400	308
Rubber substitutes	8,616	2,045	17,949	984
Totals, unmanufactured	2,533,118	$540,687	2,533,418	$424,143
PARTLY MANUFACTURED				
Hard rubber sheets and rods	638	$447	1,814	$1,618
Hard rubber tubes	.....	2,634	.....	1,163
Rubber thread, not covered	2,664	3,536	2,816	3,522
Totals, partly manufactured	3,302	$6,617	4,630	$6,303

States by Countries During May, 1922—*Continued*

Waterproofed Clothing Value	Pneumatic Casings: Automobile Number	Pneumatic Casings: Automobile Value	Pneumatic Casings: Others Value	Solid Tires: Automobile Value	Solid Tires: Others Value	Pneumatic Tubes: Automobile Number	Pneumatic Tubes: Automobile Value	Pneumatic Tubes: Others Value	Hard Rubber Goods: Tire Repair Materials Value	Hard Rubber Goods: Druggists' Rubber Sundries Value	Hard Rubber Goods: Battery Jars and Accessories Value	Hard Rubber Goods: Other Electrical Supplies Value	Hard Rubber Goods: Others Value	All Other Rubber Manufactures Value	Totals Value
.....	349	$5,542	.....	.....	.....	670	$2,026	.....	.....	.....	.....	.....	.....	$200	$7,768
$3,317	6,747	87,673	$3,191	$277	.....	6,853	11,309	$70	$1,589	$923	.....	.....	.....	3,583	181,977
.....	913	11,530	.....	.....	.....	46	146	.....	.....	.....	.....	.....	.....	.....	12,018
.....	64	844	.....	.....	.....	34	60	.....	94	.....	.....	.....	.....	.....	1,080
.....	138	1,844	.....	.....	.....	4	17	.....	13	.....	.....	.....	.....	.....	2,170
.....	75	1,361	.....	.....	.....	30	72	.....	.....	.....	.....	.....	.....	.....	1,433
.....	4	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	100
.....	336	3,873	656	1,873	.....	384	713	168	.....	.....	.....	.....	.....	231	7,514
.....	5	155	.....	.....	.....	3	8	.....	.....	.....	.....	.....	.....	.....	1,870
.....	8	145	.....	.....	.....	92	215	.....	.....	.....	.....	.....	.....	.....	374
.....	117	1,041	.....	98	.....	165	265	.....	.....	.....	.....	.....	.....	.....	1,404
$3,317	8,756	$114,108	$3,847	$2,248	.....	8,281	$14,831	$238	$1,696	$923	.....	.....	.....	$4,014	$217,708
$39,114	131,573	$1,701,250	$22,868	$127,807	$21,904	89,017	$162,318	$5,646	$31,620	$84,714	$8,753	$6,063	$28,112	$260,239	$3,476,097

Rubber Statistics for the Dominion of Canada—*Cont'd*

	April 1921 Pounds	April 1921 Value	April 1922 Pounds	April 1922 Value
MANUFACTURED				
Belting	.....	$6,610	.....	$17,334
Hose	.....	6,848	.....	9,633
Packing	.....	4,246	.....	2,702
Boots and shoes, *pairs*	.....	6,720	1,342	3,088
Clothing, including waterproofed	.....	18,701	.....	5,788
Gloves	.....	774	.....	970
Hot-water bottles	.....	1,065	.....	340
Tires, solid	.....	7,161	.....	12,491
Tires, pneumatic	.....	60,770	.....	92,087
Inner tubes	.....	4,531	.....	11,537
Elastic, round or flat	.....	21,266	.....	27,984
Mats and matting	.....	577	.....	1,161
Cement	.....	1,950	.....	2,755
Other rubber manufactures	.....	146,386	.....	145,151
Totals, manufactured	.....	$287,605	.....	$333,021
Totals, rubber imports	2,536,420	$834,909	2,538,048	$763,467

Exports of Domestic and Foreign Rubber Goods

	April 1921 Produce of Canada Value	April 1921 Reexports of Foreign Goods Value	April 1922 Produce of Canada Value	April 1922 Reexports of Foreign Goods Value
UNMANUFACTURED				
Crude and waste rubber	$2,024	$1,302	$1,337	.....
MANUFACTURED				
Belting	$298	.....	$6,058	.....
Canvas shoes with rubber soles	20,533	.....	38,588	.....
Boots and shoes	17,738	.....	2,279	.....
Clothing, including waterproofed	1,503	.....	29	.....
Hose	5,139	.....	1,290	.....
Tires, casings	.....	.....	137,397	.....
inner tubes	.....	.....	15,056	.....
pneumatic	86,080	.....	.....	.....
solid	1,319	.....	9,966	.....
vehicle	.....	1,781	.....	$251
Other rubber manufactures	8,750	10,093	17,770	1,183
Totals, manufactured	$141,360	$11,874	$228,433	$1,434
Totals, rubber exports	$143,384	$13,176	$229,770	$1,434

Rubber Statistics for Germany

Imports of Raw and Manufactured Rubber

	Three Months Ended March, 1922 Quintals[1]	Marks[2]
UNMANUFACTURED:		
Rubber, raw and refined		
From Equatorial Africa	3,909	
British East Indies	17,810	
Ceylon	13,242	364,085,000
Netherlands East Indies	19,566	
Brazil	8,496	
Other countries	3,645	
Totals	66,668	364,085,000
Gutta percha	1,557	10,742,000
Balata	693	8,590,000
Rubber, gutta percha, balata, waste, and old rubber	11,277	9,839,000
Totals, unmanufactured	80,195	393,256,000
MANUFACTURED:		
Automobile tubes		
From Belgium, *number*	128	
France	13	
United States	11	516,000
Other countries	618	
Tubes for bicycles		
From Holland, *number*	272	
Other countries	189	14,000
Bicycle tires		
From Belgium, *number*	5,698	
France	148	
Great Britain	1,246	13,675,000
United States	6	
Other countries	508	
Automobile treads:		
From Belgium, *number*	2,485	
France	93	
Great Britain	2	6,597,000
United States	177	
Other countries	915	
Rubber thread	71	2,644,000
Belting	12	281,000
Rubber footwear	1	12,000
Packing	43	130,000
Press cloths, card clothing	197	8,708,000
Hard rubber goods	29	723,000
Clothing	31	469,000
Asbestos and rubber goods	67	240,000
Cables	679	1,215,000
Miscellaneous rubber goods	265	2,029,000
Total, manufactured	.....	37,248,000
Total, imports	.....	430,504,000

Exports of Crude and Manufactured Rubber

	Three Months Ended March, 1922 Quintals[1]	Marks[2]
UNMANUFACTURED		
Balata	16	451,000
Rubber		
To Belgium	87	
Austria	437	7,474,000
Czecho-Slovakia	126	
Other countries	462	
Totals	1,112	7,474,000
Gutta percha	23	283,000
Rubber, gutta percha, balata waste	963	1,024,000
Rubber substitute	1,299	4,465,000
Totals, unmanufactured	3,413	13,697,000
MANUFACTURED		
Tubes, tires, and treads		
To Danzig	335	
Saar District	186	
Denmark	1,202	
Netherlands	1,373	
Czecho-Slovakia	558	131,914,000
Hungary	79	
Switzerland	838	
South East Asia	174	
South America	349	
Other countries	2,548	
Belting, packing, press cloths, card clothing	1,301	18,119,000
Rubber footwear, heels, soles, erasers, balls (not toys); rubber sheet combined with fabric; rubber covered rolls	13,171	148,795,000
Wagon covers of fabric and rubber; fabric with rubber or rubber thread; rubber goods with fabric	2,233	65,071,000
Hard rubber goods, except surgical instruments	1,269	56,076,000
Clothing	144	8,237,000
Asbestos rubber goods	1,662	14,867,000
Cables	71,855	357,881,000
Miscellaneous rubber goods	5,318	44,494,000
Total, manufactured	.....	845,454,000
Total, exports	.....	859,151,000

[1]One quintal equals 100 kilograms or 220 pounds.
[2]One mark equals $0.236 normal.

United States Crude and Waste Rubber Imports for 1922 (By Months)

	Plantations	Parás	Africans	Centrals	Guayuls	Manicoba and Matto Grosso	Totals 1922	Totals 1921	Balata	Miscellaneous	Waste
January ....tons	20,774	916	161	16	.....	.....	21,867	14,177	42	126	85
February	27,270	1,347	301	14	.....	41	28,973	8,641	28	448	6
March	27,711	451	326	3	154	57	28,702	14,416	17	479	61
April	13,910	462	5	2	65	.....	14,444	17,269	8	122	.....
May	19,485	1,072	3	.....	62	.....	20,622	10,732	15	855	117
June	14,851	861	14	3	.....	21	15,750	13,477	12	526	23
Totals, 6 months, 1922...tons	124,001	5,109	810	38	281	119	130,358	.....	122	2,556	292
Totals, 6 months, 1921.....	71,322	6,602	689	38	58	3	.....	78,712	248	1,011	1,573

Compiled by The Rubber Association of America, Inc.

Plantation Rubber Exports from Java*

	April 1921	April 1922	Three Months Ended April 31 1921	Three Months Ended April 31 1922
To Netherlands .....kilos	691,000	311,000	2,852,000	1,424,000
Great Britain	1,596,000	488,000	3,852,000	2,041,000
Germany	28,000	70,000	145,000	204,000
France	.....	10,000	.....	21,000
Italy	.....	.....	6,000	.....
Belgium	.....	18,000	.....	25,000
United States	488,000	871,000	2,391,000	4,503,000
Singapore	122,000	212,000	1,046,000	991,000
Japan	.....	5,000	95,000	70,000
Australia	.....	27,000	209,000	83,000
Other Countries	.....	.....	.....	.....
Totals .....kilos	2,925,000	2,012,000	10,596,000	9,362,000
Ports of origin:				
Tandjong Priok .....kilos	1,227,000	754,000	4,846,000	3,712,000
Samarang	6,000	57,000	132,000	134,000
Soerabaya	1,532,000	1,080,000	4,774,000	4,485,000

*The March figures are verified.

The Market for Rubber Scrap

New York

The rubber scrap market continues dull without development of any sort. Business has been very light and chiefly in inner tubes. The tire scrap situation has been decidedly quiet. The ten per cent freight rate cut has meant little to the trade as very little scrap is moving. The reclaiming demand is very light. Buying of red inner tubes for export has been noticeably reduced the past month. The following quotations are all nominal.

Quotations for Carload Lots Delivered

July 26, 1922

Prices subject to change without notice

Boots and Shoes			
Boots and shoes	lb.	*$0.02¼ @	$0.03
Trimmed arctics	lb.	*.02 @	
Untrimmed arctics	lb.	*.01¼ @	
Hard Rubber			
Battery jars, black compound	lb.	●	
No. 1, bright factory	lb.	*.05 @	.06
Inner Tubes			
No. 1	lb.	*.03½ @	.04
Compounded	lb.	*.02¼ @	.03
Red	lb.	*.03 @	
Mechanicals			
Black scrap, mixed, No. 1	lb.	*.02¼ @	.03
No. 2	lb.	*.01½ @	.02
Heels	lb.	*.02½ @	.03
Horse-shoe pads	lb.	*.02½ @	.03
Hose, air brake	lb.	*.01 @	.01½
fire, cotton lined	lb.	*.01 @	
garden	lb.	.07 @	
Matting	lb.	*.01 @	
Red packing	lb.	*.04½ @	.05
Red scrap, No. 1	lb.	*.07 @	.08
No. 2	lb.	*.05½ @	.06
White scrap, No. 1	lb.	*.07 @	.07½
No. 2	lb.	*.06 @	.06½
Tires			
PNEUMATIC—			
Auto peelings	lb.	*.01½ @	
Bicycle	lb.	*.01 @	.01¼
Standards white auto	lb.	*.02¼ @	.02¼
Mixed auto	lb.	*.00¼ @	.01
Stripped, unguaranteed	lb.	*.01 @	.01½
White, G. & G., M. & W., and U. S.	lb.	*.02¼ @	
SOLID—			
Carriage	lb.	*.02¼ @	.02¾
Irony	lb.	@	
Truck, clean	lb.	*.01½ @	.02

*Nominal.

TAKING ADVANTAGE OF THE COTTON MARKET

In the early days of the pneumatic tire, Sea Island cotton was used for all tire fabric. When that source of supply became inadequate Egyptian cotton relieved the situation, and for several years, as tire demand continued to increase rapidly, was specified almost exclusively. More recently, however, it has been learned that several sorts of cotton can be used with satisfaction for the various tire fabrics now in use, and the tire industry is gradually getting away from the policy of close adherence to one cotton sort. For example, builder fabric is now being made of peeler cotton, while Egyptian is being used only for cord fabrics, which are also being made of 1¼-inch staple peeler cotton.

In this connection it is unfortunate that the average tire manufacturer knows relatively little about cotton and follows the cotton market in only a cursory way. Tire manufacturers, however, stipulate the kind of cotton to be used in making the fabrics they order. This order the fabric weaver passes along to the spinner who, by the way, is the one who really keeps well informed on cotton, yet has little to say about the cotton he must buy to fill the order.

That little advantage is being taken of the market situation is shown by sales reports in comparison with the following price quotations as of May 12:

Strict Middling 1⅛-inch peeler cotton	$0.33
Egyptian Uppers, equal grade and staple	.26
Arizona Egyptian Pima No. 2 (⅞-inch staple)	.33
Egyptian Sakel, equal grade and staple	.41

Cotton merchants report that there has been a good demand for 1⅛-inch peeler cotton, whereas Egyptian Uppers have been neglected. There is but little doubt that one can be used in place of the other, although Egyptian Uppers are preferable. Tire manufacturers, however, fail to follow up the price advantage presented and continue buying the grade which is getting both scarce and high and neglecting a good substitute which is plentiful and cheap.

Of course the difference in price between Egyptian Sakel cotton and Arionza Pima is due mainly to the duty of 7 cents, which is plain to see has not helped the Pima growers, but is simply raising the price to the customer.

Manufacturers can benefit themselves greatly by studying cotton grades, keeping in closer touch with the cotton market and placing their orders accordingly. Cotton is a supply and demand article and prices move upward or downward in response to these influences. It is a fallacy to believe that the seller puts up the price as soon as there is a demand. It is the buyer who makes the price. And when one buyer is in the market it is a foregone conclusion that others are in the market also and are bidding against each other. If the supply is large, the impression made is small. If the supply is small, the impression made is large.

Thus not only will it pay tire manufacturers to take advantage of lower priced cottons which will answer the purpose satisfactorily, but doing so will have a tendency to lower quotations on the higher priced grades.

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. Early in the past month the market was irregular but strong, pending the crop report, and spot-middling Uplands was quoted at 22.20 cents. Following the government's report of the crop condition of July 25, indicating 71.2 per cent of normal and an estimated production of 11,065,000 bales, middling Uplands advanced to 23.75 cents, a record price for the year. Reaction, however, followed and with minor fluctuations during the month the market declined under the influence of reports indicating crop damage, middling Uplands being quoted at 21.65 cents on July 25.

EGYPTIAN COTTON. This market failed to respond to the fluctuations of American cotton, and has been generally firm during the past month, indicating the strong position of shippers. Medium Sakel is worth about 36 cents ex duty and medium Uppers, 29 cents.

The recent acreage estimate of the Egyptian Government was somewhat bearish, being 1,465,000 acres against 1,292,000, the acreage for last season. Uppers show the greater proportionate increase with about 75,000 acres more this year than last.

ARIZONA COTTON. This market has been generally quiet, small quantities being taken on a basis of 34 cents for medium grades.

SEA ISLAND COTTON. Sea Islands were very quiet with Average Extra Choice quoted at 44 cents.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The interest in mechanical ducks and drills continues to broaden, indicating that mechanical goods are increasing in demand. Prices have been generally firm with quotations a little higher than a month ago.

RAINCOAT FABRICS. Business for last month was reported to be very good and the outlook is that the next two months will be much better. Prices are firm and unchanged.

SHEETINGS. Prices are holding rather firm in spite of the light buying prevailing at the present time. Most buyers are covered for their near future requirements and are sitting back and awaiting further developments.

TIRE FABRICS. There has been little change in this market since last month, the demand being of routine character and prices ruling about the same as last month. The competition in low priced tires will ultimately be reflected in a demand for a fabric made of lower grade yarn to meet this competition.

TIRE
FABRICS

JENCKES
SPINNING
COMPANY

PAWTUCKET
RHODE ISLAND

AKRON OFFICE
Second National Building

NEW YORK OFFICE
Fisk Building
Broadway at 57th Street

New York Quotations

July 25, 1922

Prices subject to change without notice

Burlaps

40—7-ounce	100 *yds.*	@
40—7½-ounce	*$6.30	@$6.35
36—7½-ounce		@
40—8-ounce	* 6.35	@ 6.50
40—10-ounce	* 9.50	@ 9.60
40—10½-ounce	* 9.60	@10.00

Drills

38-inch 2.00-yard	*yard*	.20 @
40-inch 3.47-yard		.12⅜@
52-inch 1.90-yard		.23¼@
60-inch 1.52-yard		.28⅞@

Duck

CARRIAGE CLOTH

38-inch 2.00-yard enameling duck	*yard*	.21 @
40-inch 1.47-yard		.27⅞@
72-inch 16.66-ounce		.46⅞@
72-inch 17.21-ounce		.48⅛@

MECHANICAL

Hose	*pound*	.40 @
Belting		.39 @

Osnaburgs

40-inch 2.35-yard	.17⅛@
40-inch 2.48-yard	.16¼@
37½-inch 2.42-yard	.16⅛@

Hollands, 40-inch

DEAD FINISH

Standard, 37-inch, white	.18	@
37-inch, colors	.18	@
42-inch, white	.22	@
42-inch, colors	.22	@

FLAT FINISH

Imperial, 36-inch, white	.14	@
36-inch, colors	.14	@
41-inch, white	.17	@
41-inch, colors	.17	@

Fabric Market—*Continued*

Raincoat Fabrics

COTTON

Bombazine 64 x 60	yard	$0.11¼	@
60 x 48		.10¼	@
Cashmeres, cotton and wool, 36-inch, tan		.55	@
Plaids 60 x 48		.11½	@
56 x 44		.11	@
Surface prints 60 x 48		.12¼	@
64 x 60		.13	@

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.14¾	@	
48 x 48, 2.85-yard		.12½	@	
64 x 68, 3.15-yard		.14½	@	
56 x 60, 3.60-yard		.11½	@	.11¾
48 x 44, 3.75-yard		.10½	@	

Silks

Canton, 38-inch	yard	.29½	@
Schappe, 36-inch		.45	@

Tire Fabrics

BUILDING

17¼-ounce Sakellaridis, combed	pound	.80	@
17¼-ounce Egyptian, combed		.70	@
17¼-ounce Egyptian, carded		.63	@
17¼-ounce Peeler, combed		.70	@
17¼-ounce Peeler, carded		.54	@

CORD

15-ounce Egyptian, combed	pound	.73	@

BICYCLE

8-ounce American	pound		@
10-ounce American			@

CHAFER

9½-ounce Egyptian, carded	pound	.71	@
9½-ounce Peeler, carded		.62	@

*Nominal.

VULCANIZING COVERS TO TENNIS BALLS

The objectionable feature of the opening or parting of the cover seams of a tennis ball is obviated by the following method.[1]

The ball center, by whatever method produced, is expanded by heating to about 130 deegrees F. When thus enlarged, the cover fabric, prepared with a vulcanizable coating, is applied over the cemented ball and the seams butted closely together. The covered ball is then subjected to curing temperature for 20 minutes under pressure in a mold of a size snugly fitting the roughly covered ball at the ordinary temperature.

Objectionable seam opening heretofore experienced with the stitchless covered ball is obviated because the cover has been assembled with tight fitting seams when the center is of a size larger than that to which it becomes expanded in play under the warmest conditions.

[1]United States patent 1,415,438.

PROGRESS IN METRIC STANDARDIZATION

In a recent article[1] by the chairman, Metric Committee, American Chemical Society, the following rubber companies are listed among those which will hereafter purchase pure chemicals and chemical supplies as far as practicable in metric units: American Hard Rubber Co., American Rubber & Tire Co., Batavia Rubber Co., The Beacon Falls Rubber Shoe Co., The B. F. Goodrich Co., Converse Rubber Shoe Co., The Dayton Rubber Manufacturing Co., Firestone-Apsley Rubber Co., The Fisk Rubber Co., Howe Rubber Corporation, Kokomo Rubber Co., The Spreckels "Savage" Tire Co., Swinehart Tire & Rubber Co., Thermoid Rubber Co., and Western Reserve Rubber Co.

[1]The Journal of Industrial and Engineering Chemistry, April, 1922, page 332.

The Market for Chemicals and Compounding Ingredients

New York

MARKET conditions on essentially all chemicals and compounding ingredients used in the rubber manufacturing industry have continued very steady during the past month. Price changes have been the exception. Rubber manufacturers are not yet inclined to stock materials beyond current needs or known nearby requirements.

ANILINE. Supplies early in the month were heavy and continued so for a fortnight when a strong demand reduced the stock surplus and caused a small advance in price.

ANTIMONY SULPHIDES. The spring trade from makers of inner tubes did not call for the amount of material hoped for and business continues poor.

BARYTES. Consumption has been liberal in the paint, lithopone and rubber trades and prices hold steady.

BENZOL. Demand continues in excess of the supply with prices unchanged.

BLANC FIXE. Stocks are reported small and prices steady.

CARBON BISULPHIDE. The summer activity of this material is due to its use as an insecticide, which is seasonal. Its use in the rubber industry as a solvent in the vapor cure process is not especially seasonal and is therefore routine.

CARBON BLACK. The trade in black for both domestic use and export is very active. The demand fully equals the supply and prices continue very strong. Makers are actively interested in enlarging the supply.

Other blacks are also in good request at steady prices.

CARBON TETRACHLORIDE. There is an oversupply with demand only routine.

CHINA CLAY. Both domestic and imported are in good request. There has been a slight reduction in the price of the imported material.

DRY COLORS. Business is reported improved with the progress of the month and prices steady.

LITHARGE. Quotations remain unchanged. Some improvement is noted in request for material by manufacturers.

LITHOPONE. Makers of lithopone are reported operating their plants to capacity and are feeling competition of imported lithopone. There is very little call for the cheap by-product lithopone of German manufacture. Good business is being done in all the domestic grades.

SOLVENT NAPHTHA. Supplies are short and prices firm with good consuming trade in progress.

SUBLIMED LEAD. The same conditions hold for this material as for litharge. There is some improvement in business with unchanged prices.

SULPHUR. Trade is routine at fixed prices.

SULPHUR CHLORIDE. Inactive and prices weak.

TALC. Imports just balance the demand. Prices remain steady.

WHITING. This material is in good routine demand, characterized as normal for the season. Prices stable.

ZINC OXIDE. The improvement for tire making is greater than that for paint purposes and is well maintained. Manufacturers of oxide are very much interested in how to increase production.

Chemical Market—*Continued*

New York Quotations

July 25, 1922

Prices subject to change without notice

Accelerators, Organic

Accelerene (f. o. b. English port)	lb.	13¢.	@
Adco	lb.	$0.75	@
Aldehyde ammonia crystals	lb.	.95	@
Aniline (f. o. b.) factory	lb.	.14½	@ .15½
Diphenyl guanidine	lb.	1.20	@ 1.50
Ethylidene aniline	lb.	.75	@ .90
Excellerex	lb.	.40	@
Formaldehyde aniline	lb.	.50	@
Hexamethylene tetramine	lb.	.72½	@ .75
Lead oleate (bbls.)	lb.	.14	@
Methylene aniline	lb.	.34	@ .40
N. C. C.	lb.	.30	@
No. 999	lb.	.13¾	@
Paradin	lb.	.36	@
Paraphenylene diamine	lb.	1.60	@ 1.70
Super-sulphur, No. 1	lb.	.50	@ .60
No. 2	lb.	.25	@ .30
Super-X	lb.	.50	@
Super-XX	lb.	.65	@
Thiocarbanilide	lb.	.27	@ .37
Vul-Ko-Cene	lb.	.35	@
XLO	lb.	1.20	@

Accelerators, Inorganic

Lead, dry red	lb.	.09	@ .09¼
white, basic carbonate	lb.	.07¼	@ .08
Lime, flour, superfine	lb.	.02	@ .02½
Litharge, domestic	lb.	.08½	@ .08¾
imported	lb.	*.17	@
Orange, mineral	lb.	.12	@ .14
Magnesia, carbonate, light (bags)	lb.	.05	@
calcined, light (bbls.)	lb.	.24	@ .25
calcined, ex. light (bbls.)	lb.	.45	@
calcined, md. light (bbls.)	lb.	.15	@
calcined, heavy (bbls.)	lb.	.05	@ .05½

Acids

Acetic 28% (bbls.)	cwt.	2.50	@ 3.00
glacial, 99%	cwt.	8.75	@ 11.50
Cresylic (97% straw color)	gal.	.56	@ .58
(95 dark)	gal.	.51	@ .53
Muriatic, 20 degrees	cwt.	1.10	@ 1.25
Nitric, 36 degrees	cwt.	4.75	@ 5.25
Sulphuric, 66 degrees	ton	14.00	@ 16.00

Alkalies

Caustic soda	cwt.	3.75	@
Soda ash, 58% (bbls.)	cwt.	1.95	@ 2.30

Colors

BLACK

Bone, powdered	lb.	.05½	@ .07½
Carbon black	lb.	.16	@ .22
pressed	lb.	.16	@ .22
Dipped goods	lb.	1.00	@
Drop	lb.	.07½	@ .16
Hyposulphite of lead	lb.	.20	@ .25
Iron oxide	lb.	.04½	@ .16
Ivory black	lb.	.15	@ .45
Lampblack	lb.	.12	@ .40
Micronex	lb.	.17	@ .24
Rubber maker's black	lb.	.40	@

BLUE

Cobalt	lb.	.21	@ .26
Dipped goods	lb.	1.00	@
Prussian	lb.	.60	@
Rubber maker's blue	lb.	3.50	@
Ultramarine	lb.	.10	@ .35

BROWN

Iron oxide	lb.	.04½	@ .05½
Sienna, Italian	lb.	.04¾	@ .05¾
Umber, Turkey	lb.	.05	@ .06
Vandyke	lb.	.04½	@ .05½

GREEN

Chrome, light	lb.	.30	@ .32
medium	lb.	.35	@ .36
dark	lb.	.36	@ .45
commercial	lb.	.12	@
tile	lb.	.11	@ .13
Guignet	lb.	1.50	@
Dipped goods	lb.	1.00	@
Oxide of chromium	lb.	.45	@ .57
Rubber maker's green	lb.	3.50	@

RED

Antimony, crimson	lb.	.33	@ .42
crimson, 15/17% free	lb.	.34	@ .42
crimson, R.M.P. No. 3	lb.	.48	@
crimson F	lb.	.35	@
Antimony, golden	lb.	.17½	@ .24
golden R.M.P. No. 7	lb.	.20	@
golden, 15/17% free	lb.	.18	@ .21
golden 1	lb.	.30	@
golden 2	lb.	.25	@
7-A	lb.	.35	@
vermilion	lb.	.55	@
red sulphuret	lb.	.20	@
Arsenic sulphide, red	lb.	.12	@ .13
lemon	lb.	.75	@ 1.00
orange	lb.	.75	@ 1.00
Cadmium sulphide	lb.	1.85	@
cold cure	lb.	1.70	@ 1.85
hot cure	lb.	1.40	@ 1.55
Dipped goods red	lb.	1.00	@
purple	lb.	1.00	@
orange	lb.	$1.00	@
Indian	lb.	.08	@ .12
Indian maroon, English	lb.	.12	@
Iron oxide, reduced grades	lb.	.10	@ .12
pure bright	lb.	.12	@ .14
Maroon oxide	lb.	.08	@ .12
Red oxide, crimson	lb.	.05½	@
English	lb.	.12	@
Spanish	lb.	.03½	@ .04½
Oximony	lb.	.16	@
Para toner	lb.	1.25	@ 1.40
Rubber maker's red	lb.	3.50	@
purple	lb.	2.50	@
Spanish natural	lb.	.03½	@ .04½
Toluidine toner	lb.	2.25	@ 2.50
Venetian	lb.	.02½	@ .05½
Vermilion, American	lb.	.25	@ .30
English quicksilver	lb.	.92	@ .97

WHITE

Albalith	lb.	.06	@ .06½
Aluminum bronze	lb.	.55	@ .60
Lithopone, domestic	lb.	.06	@ .06½
Zinc oxide:			
American Horse Head Special	lb.	.08	@ .08½
XX red	lb.	.07½	@ .08
French process, Florence White seal	lb.	.11	@ .11½
Green seal	lb.	.09¾	@ .10¼
Red Seal	lb.	.08¾	@ .09¼
Zinc sulphide	lb.	.45	@
Azo (factory):			
ZZZ (lead free)	lb.	.07¾	@ .08
ZZ (—5%) leaded	lb.	.07½	@ .07¾
(8/10% leaded)	lb.	.07¼	@ .07½

YELLOW

Arsenic, yellow	lb.	1.00	@
Cadmium, sulphide, light	lb.	1.85	@
Chrome, light and med.	lb.	.16	@
Dipped goods	lb.	1.00	@
India rubber	lb.	1.00	@
Ochre, domestic	lb.	.02	@ .02½
imported	lb.	.03	@ .03½
Rubber maker's yellow	lb.	3.50	@

Compounding Ingredients

Aluminum flake (carloads)	ton	30.00	@
hydrate, light	lb.	.17	@ .18
Ammonia carbonate	lb.	.07	@ .08¾
Asbestine	ton	25.00	@
Aluminum silicate, C. L.	ton	22.00	@ 25.00
Barium, carbonate,	ton	61.00	@ 65.00
dust	ton	100.00	@
Barytes, pure white C. L.	ton	23.00	@
off color (carloads)	ton	15.00	@ 17.00
uniform floated (carloads)	ton	23.00	@
Basofor	lb.	.04¾	@
Beta-naphthol	lb.	.25	@
Blanc fixe	lb.	.04	@ .04½
Carrara filler (factory)	ton	18.00	@
Chalk, precip. extra light	lb.	.03½	@ .04¼
heavy (f.o.b. factory)	lb.	.02½	@ .03¼
China, clay, Dixie	ton	22.00	@ 32.00
Blue Ribbon	ton	25.00	@
Blue Ridge	ton	22.00	@ 32.00
Cotton linters clean mill-run	lb.	.05	@
Fossil flour (powdered)	ton	60.00	@
(bolted)	ton	60.00	@
Glue, high grade	lb.	.30	@ .40
medium	lb.	.20	@ .26
low grade	lb.	.15	@ .18
Graphite, flake	lb.	.05	@ .12
amorphous	lb.	.05	@
Infusorial earth (powd.)	ton	60.00	@
(bolted)	ton	65.00	@
Liquid rubber	lb.	.15	@
Mica, powdered	lb.	*.15	@
Pumice stone, powdered	lb.	.03	@ .05
Rotten st., powd. (bbls.)	lb.	.02½	@ .04½
Silica, gold bond	ton	40.00	@ 50.00
silver bond	ton	30.00	@ 35.00
Soap bark, cut	lb.	.08½	@ .10
Soapstone, powdered, gray	ton	12.00	@
Starch, powd. corn (bags)	cwt.	2.57	@ 2.67
(bbls.)	cwt.	2.85	@ 2.95
Talc, soapstone	ton	22.50	@
Terra blanche	ton	23.00	@ 25.00
Tripoli flour, cream or rose	ton	25.00	@ 30.00
white (factory)	ton	27.50	@ 32.50
Tyre-lith	ton	85.00	@
Whiting, Alba	cwt.		@
commercial	cwt.	1.00	@ 1.10
Danish	ton	22.00	@ 25.00
English cliffstone	cwt.	1.60	@ 1.75
gilders (bolted)	cwt.	1.15	@ 1.25
K. T.	ton	14.00	@
Paris, white, American	cwt.	1.25	@ 1.35
Perfection	lb.	$0.40	@ $0.45
Plymouth	ton	16.00	@ 18.00
Quaker	ton	13.00	@ 15.00
Superfine	ton	13.00	@
Wood pulp, XXX	ton	27.50	@
X (f.o.b. factory)	ton	22.50	@

Mineral Rubber

Gilsonite	ton	70.00	@
Genasco (factory)	ton	50.00	@ 52.00
Hard hydrocarbon	ton	32.00	@ 42.00
Soft hydrocarbon	ton	30.00	@ 35.00
320/340 M. P. hydrocarbon	ton	45.00	@ 50.00
300/310 M. P. hydrocarbon	ton	40.00	@ 42.50
Pioneer, M. R., solid (fac.)	ton	42.00	@ 44.00
M. R. granular	ton	52.00	@ 54.00
Robertson, M. R., solid	ton	35.00	@ 75.00
M. R. granular (factory)	ton	54.50	@ 72.50
Rubrax (factory)	ton	50.00	@
States "A"	ton	45.00	@
No. 1	ton	40.00	@
Synpro, gran. M. R. (fac.)	ton	54.50	@ 70.00

Oils

Avoilas compound	lb.	.14	@
Castor, No. 1, U. S. P.	lb.	.12½	@
No. 3, U. S. P.	lb.	.12	@
Corn	lb.	.11	@
Cotton	lb.	.12	@
Glycerine	lb.	.16	@ .16½
Halowax (500-lb. drums)	lb.	.28	@
Linseed, raw, domestic	lb.	.12	@
Palm lagos	lb.	.07	@ .07¼
Palm, niger	lb.	.08	@
Peanut	lb.	.11	@
Petrolatum, standard	lb.	.05	@ .08
Petrolatum, sticky	lb.	.08	@ .10
Pine, steam distilled	gal.	.85	@ .90
Rapeseed, refined	lb.	.12	@
blown	lb.	.14	@
Rosin	gal.	.41	@ .43
Synpro	gal.	.40	@ .80
Soya bean	lb.	.12	@
Tar	gal.	.25	@ .26

Resins and Pitches

Cumar resin hard	lb.	.09	@ .15
soft	lb.	.09	@ .15
Tar, retort	bbl.	10.00	@ 10.50
kiln	bbl.	9.50	@ 10.00
Pitch, Burgundy	lb.	.05	@
coal tar	lb.	.01½	@
hardwood	lb.	.02	@ .03
pine tar	lb.	.03	@
ponto	lb.	.07½	@
Rosin, K (bbl.)	280 lbs.	7.00	@
strained (bbls.)	280 lbs.	6.50	@
Shellac, fine orange	lb.	*.90	@

Solvents

Acetone (98.99% drums [6.62 lbs. per gal.])	lb.	.10½	@ .12
Benzol (90%, drums [7.21 lbs. per gal.])	gal.	.27	@ .32
pure (drums)	gal.	.35	@ .46
Carbon bisulphide (dms. [10.81 lbs. per gal.])	lb.	.06	@ .07
tetrachloride (drums. [13.28 lbs. per gal.])	lb.	.09½	@ .10½
Motor gasoline (steel bbls.)	gal.	.27	@
Naphtha, V. M. & P.	gal.	.26	@
solvent (drums extra)	gal.	.24	@
Paracymene (factory)	lb.	.15	@
Toluol, pure (7.21 lbs. per gal.)	gal.	.30	@ .35
Turpentine, spirits	gal.	1.25	@
wood, steam distilled	gal.	1.18	@

Substitutes

Black	lb.	.08	@ .14
Brown	lb.	.10	@ .15
White	lb.	.09	@ .16
Brown factice	lb.	.08	@ .14
White factice	lb.	.09	@ .15

Vulcanizing Ingredients

Black hypo	lb.	.25	@ .35
Sulphur chloride (drums)	lb.	.04½	@ .05
(jugs)	lb.	.20	@
Sulphur, Bergenport brand, 100% pure (bbls.)	cwt.	2.55	@ 2.90
(bags)	cwt.	2.30	@ 2.65
Sulphur flour (bbls.)	cwt.	2.60	@ 2.90
(bags)	cwt.	1.35	@ 1.70
Superfine 100% pure	cwt	2.00	@ 2.40

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com.	lb.	.38	@ .42
ceresine, white	lb.	.09	@ .10
carnauba	lb.	.16½	@ .17
montan	lb.	.03¾	@ .04
ozokerite, black	lb.	.15	@ .17
green	lb.	.26	@ .27
paraffine	lb.	.02¼	@ .06½
sweet wax	lb.	.12	@

*Nominal.

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